USDA

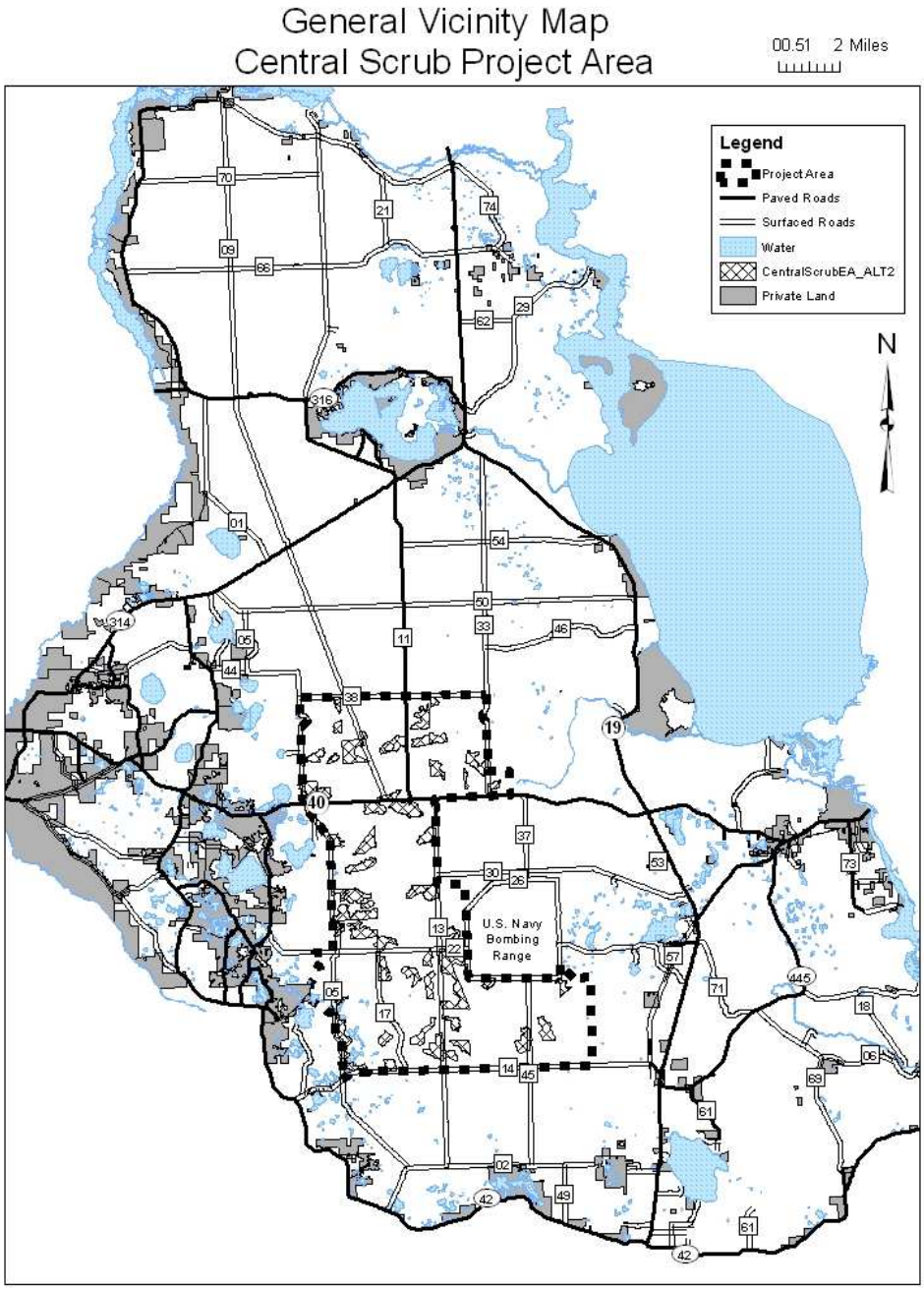
United States
Department of
Agriculture

Forest
Service

Environmental Assessment

Central Scrub

Seminole and Lake George Districts, Marion County, Florida
Ocala National Forest



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CHAPTER 1

1.0 INTRODUCTION AND PURPOSE AND NEED

1.1 Proposed Action

The United States Department of Agriculture, Forest Service (USFS), proposes a project that would:

- create about 6,400 acres of habitat for the Florida scrub-jay through timber sales, mechanical treatments, and prescribed burning. Activities would include commercial harvesting sand pine and crooked wood, road reconstruction and maintenance, mechanical treatments, prescribed burning, and seeding sand pine (see Figure 1).

- restore natural hydrology of the Long Pond/Big Prairie area by relocating about 2.1 miles of Forest Road 14-2.8 from around the Long Pond prairie system and either relocating the Forest Road 05 to bypass Big Prairie by relocating about 0.7 miles of Level 3 road or reconstructing this section of FS 05 and installing a better culvert system that would allow natural water flow between the two parts of Big Prairie that area separated by FS Road 05. The relocation would require new road construction on about 3.3 miles or 2.9 miles depending on which Big Prairie restoration is done. Activities would include road construction and road obliteration (see Figure 2).

- change existing road system throughout the project area as follows:
    - decommission about 80 miles of road from the minimum road system. *Note: about 80% of the roads proposed to decommission are currently NOT open to the public as per 2007 EA for Route Designation in the Sand Pine Scrub Ecosystem of the ONF and the 2013 Motor Vehicle Use Map (MVUM). Through road use surveys and discussions with user groups these roads are either not being used or are causing continual resource damage and these roads have been identified as no longer needed to meet forest resource management objectives,*
    - add about 13 miles of existing unauthorized roads to the minimum road system. *Note: about 50% of these roads would remain closed and designated as Level 1, closed roads. The other 50% would be open to the public,*
    - change about 14 miles of Seasonal roads to Open Year round,
    - change about 0.7 miles of OHV Trail to Level 2, open to the public. OHV Trail would be relocated to nearby, existing closed road.
    - change designations on about 5 miles of system roads to improve overall access to the public.

Decommissioning activities may include installation of barriers and/or revegetation (see Figure 3).

The following activities would be part of the project but do not require NEPA analysis:

- Monitoring success of pine regeneration
- Monitoring effects of treatments on Florida scrub-jays and groundcover plants

All activities would occur on the Ocala National Forest in Marion County on the Seminole and Lake George Ranger Districts. More specific acreages, mileages, and treatment breakdowns are listed in Table 2.

Figure 1. Proposed Timber Harvest areas and Treatments
Compartment and Stand Numbers Shown

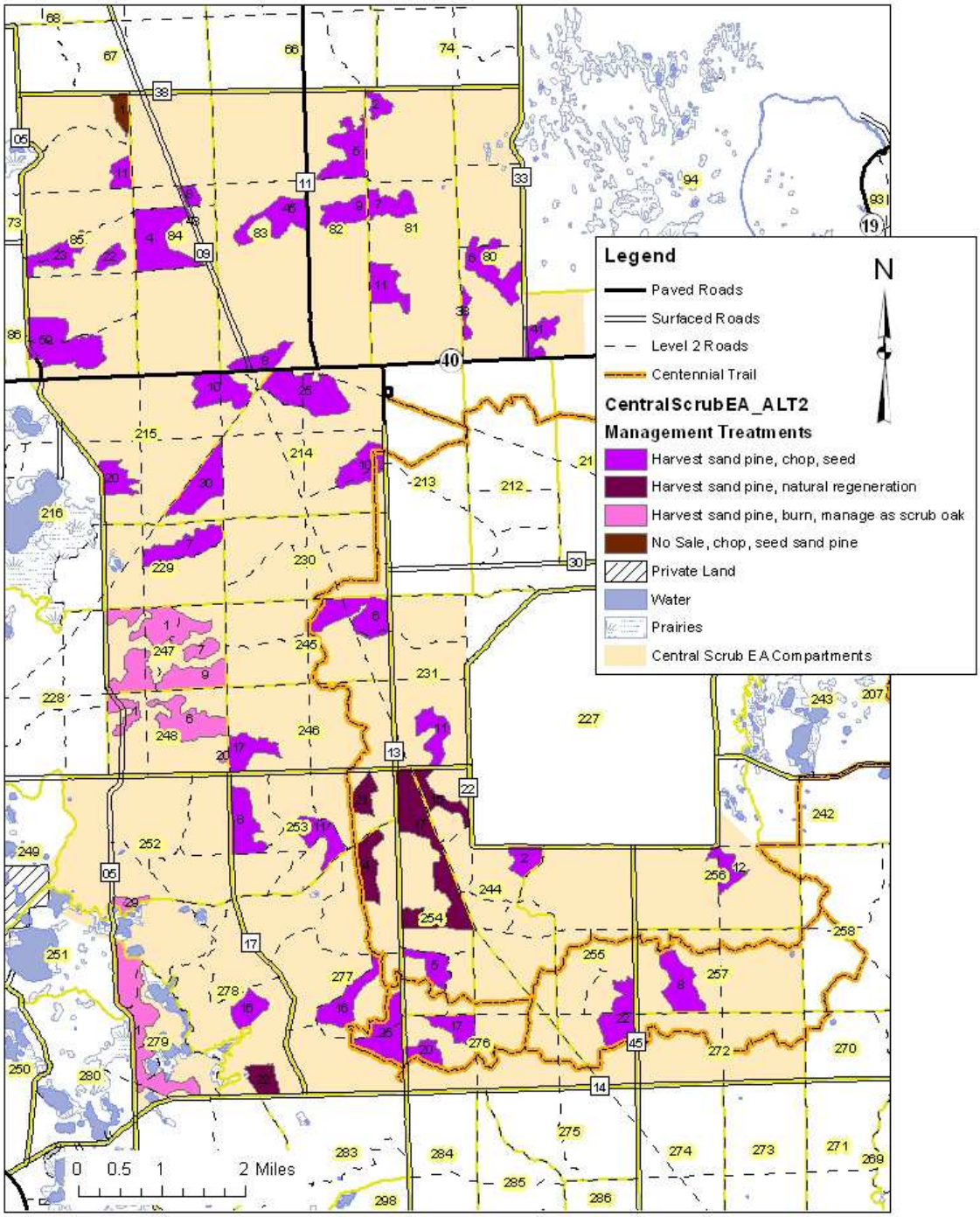


Figure 2. Planned Road Relocations Around Big Prairie and Long Pond Area

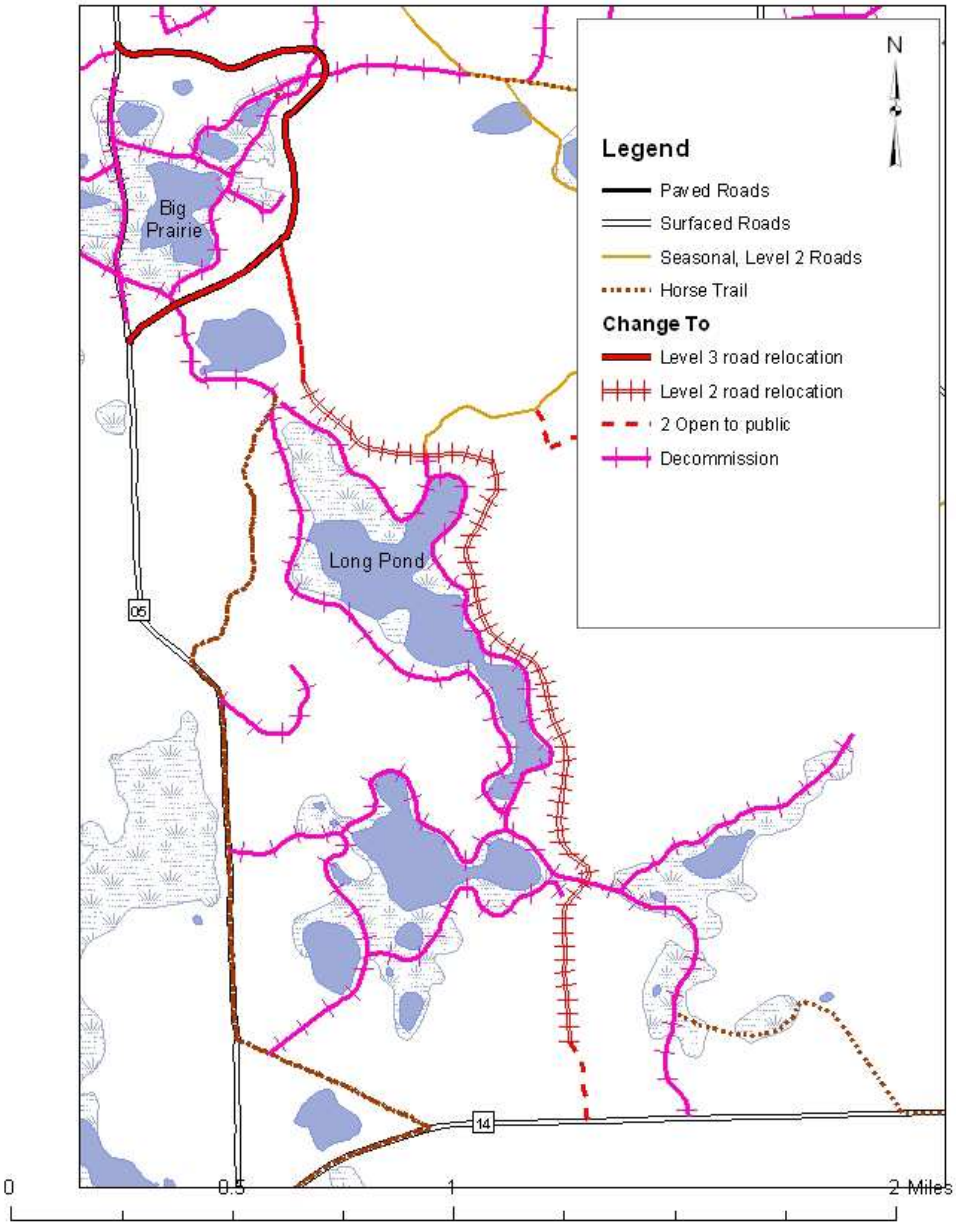
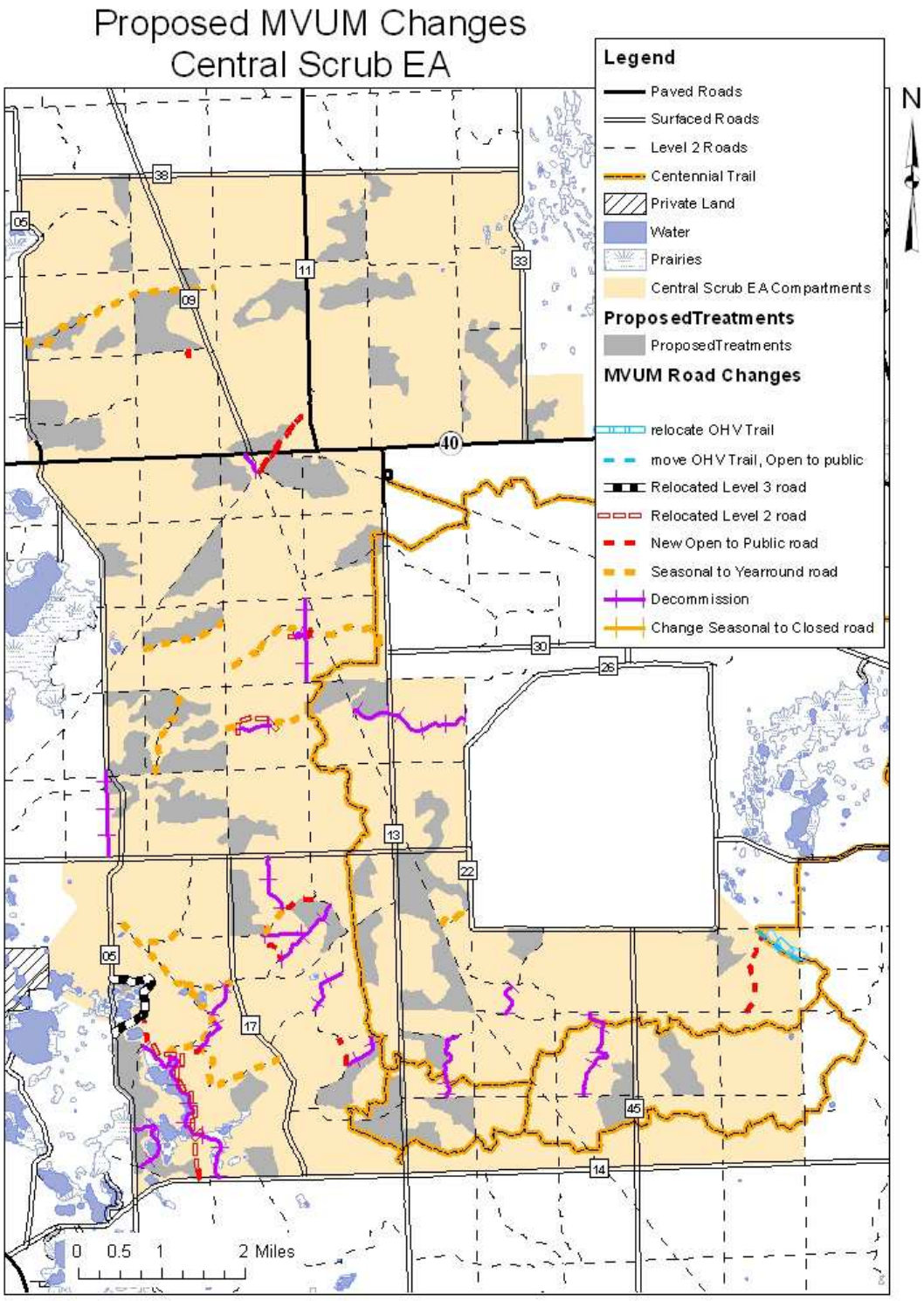


Figure 3. Proposed Road System Changes – to Forest Service Roads that are presently Open to the Public



1.2 Purpose and Need

Create scrub openings by sand pine harvesting and mechanical/fire treatments:
The ONF provides habitat for the largest remaining population of Florida scrub-jays in the world. Under current ecosystem management practices this population has been generally stable. This project is needed to meet the continued habitat needs of Florida scrub-jays on the ONF.
Stands are groups of similar types, ages, and conditions of trees. The stands proposed for treatment were selected to provide opportunities for scrub-jay colonization from nearby occupied sites and to combine stands to make larger openings. Also, stands with old or damaged sand pine were selected for harvest as trees in this condition start to die off in increasing numbers so that in five years there may not be enough sand pine trees left to sustain a commercial harvest.
The current suitable scrub-jay habitat is defined as stands of sand pine or scrub oak aged 3-12 years. Currently, on the ONF, there are 41,275 acres in suitable scrub-jay habitat. The Forestwide Objective #9 in the Land and Resource Management Plan (LRMP) for National Forests in Florida are to maintain at least 45,000 to 55,000 acres of Florida scrub-jay habitat. Table 1 summarizes scrub projects during the last ten years and compares what has been accomplished with what the goal was in the Forest Plan.

Table 1. Decisions during the last 10 year period that created scrub-jay habitat

DN* date	Project Name	Acreage
11/04	Hurricane Salvage	3,257
12/04	Dry	700
6/05	Wildlife Mowing Scrub – no sale	506
9/05	Bombing Range	82
11/06	St. Francis	694
11/06	Moss Bluff	300
2/07	Scrub-jay 04	2,199
1/08	Big Scrub	2,387
9/08	Scrub-jay Pipeline	3,087
10/09	South Ocala Scrub	2,476
4/10	Scrub-jay Management Area	995
4/11	Hog Valley	3,425
12/11	Florida scrub-jay chopping – no sale	3,411
3/13	19&40 Scrub	5,649
	TOTAL	**29,168**

*DN = Decision Notice, the formal notice when a decision is made by the authorized federal decision maker known as the "Responsible Official".

The Forestwide Objective #19 in Forest Plan is to regenerate between 39,000 and 41,000 acres or about 4,000 acres per year by timber harvesting. As noted in Table 1, 29,168 acres of new scrub jay habitat was created though only about 25,251 acres were done by timber harvesting, which averages just 2,525 acres per year. Though Florida scrub-jay populations are noted as stable it has been largely because of mechanical treatments and fire events, both prescribed fire and wildfires that have occurred in scrub. ONF biologists predict that unless we reverse this declining trend in creating new scrub openings through timber harvesting, scrub-jay populations could decline.
This project will create about 6,400 acres of new scrub-jay habitat mostly through timber harvesting. A map of proposed harvesting and other treatment areas is shown in Figure 1.

Modify Existing Road System
It is policy for National Forests in Florida to review and evaluate current road needs and to review existing status of the forest road system within the project area in an Environmental Assessment project. Any needed changes to the Road System would be made as part of the overall proposal. This fulfills Forest Service's Road System Management Regulations, 36 C.F.R. § 212.5, contain two important requirements with regards to each National Forest's road systems: (1) the identification of a "minimum road system" and (2) the identification of "unneeded roads" that, therefore, should be decommissioned.

Decommissioning simply means to "restore roads to a more natural state," which can include activities ranging from simply blocking the entrance to the road or scattering slash on the roadbed to completely eliminating the roadbed by restoring natural contours and slopes.

The Revised LMRP (p.3-7) includes a Road Management standard that requires the Forest Services to "Close and return to resource production all existing roads, whether temporary or system roads, that are not needed for resource activities." (Forestwide Standard IN-2).

The Interdisciplinary Team (IDT) of this project assessed the current road system in the project area, and with input from the public, recommended the changes listed in Table 2. A map of the proposed changes as affecting the MVUM are in Figure 3.

Restore Natural Processes in Wetlands

During the process of reviewing the status of the forest road system within the project area, certain roads in the Big Prairie and Long Pond areas were identified as roads with locations inconsistent with current resource goals. As part of this project, the portions of these roads that impact natural processes will be relocated or otherwise mitigated.

Big Prairie

Forest Road 5 runs through a significant portion of the interior of Big Prairie. The original road construction took soils from the immediate area to establish a crown for the current roadway. This resulted in a road slightly elevated from the prairie with a shallow ditch on either side. This arrangement impacts the flow of water from one side of the prairie to the other, and also impedes the movement of animals, particularly smaller amphibians such as frogs between the two sides of the prairie. Moving the road completely off the prairie and to the east will rectify these problems by removing the current road. If moving FR 5 is not feasible, installing culverts in the current road will help restore water flow and allow for animal movement at specific junctures.

Figure 4. Big Prairie. Forest Road 5 is running north-south through the prairie.

Long Pond

Forest Road 14-2.8 currently runs east of Long Pond and closely along the break between the upland vegetation and basin of Long Pond. Past high water marks came up to this perimeter. The close proximity of the Forest Road to the pond and its bed, whether wet or dry, has: (1) contributed to resource damage from vehicles driving in the pond bed; and (2) removed important cover for reptile and amphibian species that move between wetland and upland habitats. The proposed road changes will alleviate these problems primarily by eliminating roadways on the west side of Long Pond. On the east side of Long Pond, moving the road away from the pond bed edge and further into the sand pine scrub will help these problems by keeping vehicular traffic away from the pond bed (spatially and visually) and by moving the road away from wetter mesic habitat. Former road beds will be revegetated where needed, restoring cover for reptile and amphibian species.

Figure 5. Detail of Long Pond showing resource damage from unauthorized vehicle use.

Achieve Desired Condition in Forest Plan
The LRMP was completed in 1999 and has been amended ten times. A copy of the LMRP and its amendments is available at http://www.fs.usda.gov/land/florida/landmanagement. This document established Forest Plan Management Area (MA) goals, forest-wide goals, and forest-wide objectives many of which that would be achieved through implementation of this proposed project. A listing of these goals and objectives is listed in Appendix D.

1.3 Decision to Be Made

The Responsible Official (District Ranger) will decide whether to proceed with the Proposed Action.
If a determination is made that the impact is not significant, then a "Finding of No Significant Impact" (FONSI) would be prepared and a Decision Notice would document the decision of the District Ranger.

1.4 Issues

The interdisciplinary team (IDT) for this project (listed in Chapter 5) received comments from Save Our Big Scrub through Robin Lewis, Central Florida Dog Hunters (CFDH), and U.S. Navy (Don Heaton) A meeting was held with Robin Lewis on April 3rd, 2013 and his comments and issues were discussed. Meetings were held with representatives from Central Florida Dog Hunters (CFDH) concerning changes to the road system. Several safety issues were raised regarding their need for roads that parallel or are near busy highways so they can safely catch their dogs before they get out on the highway. Several of the road changes proposed were brought up by CFDH at these meetings. Comments from Don Heaton, Pinecastle Range Complex Director, concerned Level 2 roads within the Safety Fan, an extended safety area where visitors are excluded during operations. From these meetings and comments, Alternative 2 was developed and to include additional scrub oak management areas, additional scrub prescribed burning, and changes to the MVUM that balanced dog hunters' requests with public safety and resource needs**.**

CHAPTER 2

2.0 ALTERNATIVES

2.1 Alternatives Considered But Not Developed and/or Analyzed

In the past, other alternatives were considered to meet the project's purpose to create scrub-jay habitat.

a. No timber sales - mechanical treatments only – Because large sand pine trees are present on most of the sites, mechanical treatment would have to be done by large expensive mowers. The large amount of fuel created would require prescribe burning on each site after treatment. Cost of treatment would be extremely high and under current budget constraints, this treatment would not be practical.

b. No timber sales - prescribed burning only - Stands with larger sand pines could be burned using a stand replacement burn method. Under current staffing levels and the short burning season for safe execution of stand replacement burning, it would take over ten years to carry out this project. As discussed in Chapter 1, Purpose and Need, the Forest Service needs to complete this project within 1-2 years to meet the habitat needs of the Florida scrub-jay. Additionally, shifting resources to burn these areas would take away from our ability to burn scrub jay management areas and other scrub that requires the same weather conditions. Cost of treatment would be much higher than allowing timber sales to create openings. A fire-only alternative was discussed and assessed in detail in Scrub Jay Project 02-00-02, completed in May 2003.

These alternatives were not developed because though they met the project purpose to create scrub jay habitat, they did not meet other goals and objectives of the LMRP. Additionally, a. would be prohibitively expensive and the cost to implement b. would still greatly exceed the cost of implementing the proposed alternative.

An initial alternative, Alternative 1, was developed but not analyzed. This was the original proposal that was modified internally to add a project to restore hydrology in the Long Pond/Big Prairie area by relocating roads from out of the prairies. Alternative 1 was described in the first public scoping letter dated March 11, 2013.

2.2 Alternative Considered

Alternative 2 – Proposed Action, see Maps in Figures 1, 2 and 3.

Table 2. Proposed Actions

Acres	**Treatments to Create Scrub-jay Habitat**			Comments
4,457	Harvest sand pine	After harvest, treat by roller drum choppers and/or prescribe burn	Seed sand pine	
751	Harvest sand pine	No treatments	Natural regeneration	In old WWII Bombing Range
1,123	Harvest sand pine	After harvest, prescribe burn	Manage as scrub oak	After treatments, stands would be part of a regular prescribe burn unit and managed with fire
54	No harvest	Treat with roller drum choppers and/or prescribe burn	Seed sand pine	Not enough sand pine present for a commercial harvest
Miles	**Work Activities for Hydrology Restoration**			
0.7	Decommission part of FS Road 05 that goes through Big Prairie. Remove all surfacing and road material from out of prairie, revegetate as needed, remove culverts and other drainage structures, block access as needed. **			

1.4	Construct new Level 3 road around Big Prairie to replace section decommissioned as described above. Work includes clearing and grubbing, surfacing, and constructing drainage as needed. ***
2.1	Decommission part of FS Road 14-2.8 located within prairie area in vicinity of Long Pond. Block access and revegetate as needed.
2.0	Construct new Level 2 road around Long Pond area to replace section of FS Road 14-2.8 as described above. Work includes clearing and grubbing and some grading.

Miles	**Road Work**-to support harvesting	Miles	**Changes to Road System**
14.9	Road Reconstruction	65	Decommission Closed Roads
As needed	Road Maintenance	15	Decommission Open to Public Roads*
		11	Add Roads to Forest System*
		14	Change Seasonal roads to Year round*
		0.7	Relocate OHV Trail*
		5	Change designations on Forest System roads

*would affect Motor Vehicle Use Map (MVUM), published annually.
** Forest Road 05 may be reconstructed instead of relocated with a better culvert system that would allow natural water flow on Big Prairie.
*** not applicable, if Forest Road 05 is reconstructed instead of relocated.

2.3 Project Design Criteria

The follow site-specific project design criteria minimize adverse effects.

WATER:

1. Water and wetlands are protected by S&G WA-1 (LRMP, p. 3-24) and incorporates Best Management Practices (State of Florida guidelines). Harvesting activity in C252-S29, C278-S16, C278-S22 and C279-S1would buffer water and wetlands by at least 100 feet from ground disturbing activities. Appendix D shows specific protection requirements for each water/wetland impacted.

WILDLIFE AND PLANTS:

2. To maximize the potential for beneficial effects and minimize the potential for adverse effects on Threatened, Endangered and Sensitive (TES) plant and animal species, the timber sale administrator would coordinate with the botanist or wildlife biologist about the placement of log landings and skid trails.

WILDLIFE:

3. To reduce the risk of destroying reptile eggs, roller-chopped stands that are seeded and fail to meet the sand pine lower stocking level of 200 seedlings per acre would not be re-chopped.
4. No roller-chopping activities would occur from May to August to prevent destruction of the eggs or young of ground-nesting birds and herpetofauna.
5. To reduce the potential of adversely affecting eastern indigo snakes, all contractors would be educated on their identification, status, felony charges that would result from their take (16 USC, Endangered Species Act), and federal law against killing, molesting, or possessing wildlife without a permit [36 CFR 261.8(a)].
6. There are several known actively occupied striped newt ponds in the Long Pond area within the project area. Habitat of striped newt ponds would be protected from roller-drum chopping within 700 feet of the occupied wetland margin. If actively occupied striped newt ponds are discovered in other parts of the project area, the potential habitat of any terrestrial striped newts would also be protected from roller-chopping with a 700-foot radius buffer from the occupied wetland margin.
7. Field personnel and contractors would be educated in gopher tortoise burrow identification if new to the ONF. Log landings and skid trails would not be located within 25 feet of known gopher tortoise burrows. Equipment operators would be instructed to maintain a 25 foot distance during operations when previously unknown burrows are encountered.

PLANTS:

8. Minimize the potential for introduction and spread of non-native invasive species (NNIS) such as cogon grass, Japanese climbing fern, and Japanese mimosa on the ONF as a result of timber sales or other mechanical activities. Cogon grass and Japanese climbing fern are present in the project area. Known and new NNIS locations would be documented and

treated prior to timber harvest. All equipment would be washed according to timber contract specifications (BT6.35) before entering the ONF. If site preparation equipment may be transported on a road right-of-way, a Forest Service official would inspect the route. Coordination would also take place to prevent the spread of NNIS during road reconstruction and maintenance.

HERITAGE:

9. The ONF Archeologist would locate and protect heritage resource sites on the ground prior to ground disturbing activity as discussed in the Management Summary for FY-13, Heritage Resources Report (Appendix J).

PRESCRIBED FIRE:

10. Prescribed burning would be done within Regional and Forest standards, and within parameters described in the EA for Prescribed Burning on the ONF (2006). Parameters include that during prescribed burning operations, suppressant foam will not be applied within wetland ecotones when wetlands are holding water, and foaming agent containers will not be rinsed in wetlands.
11. Emphasize prescribed burning to enhance habitat for TES species.

RECREATION:

12. Promote public safety and protect resources adjacent to Horse Trails and motorized trails Compartments 84, 85, 214, 229, 245, 246, 247, 248, 253, 254, 255, 276, 277, 278 and 279 by using restrictions and cleanup activities as needed. Safety signs would be posted. Trails would usually remain open during timber harvest, site preparation and reforestation treatments, but would be subject to temporary relocation or closure as needed. Timber harvest may be prohibited on weekends, and may be restricted to periods of low trail usage. Trees with trail blazes on them would either be left or replaced with a post and sign. To better define OHV trails during site preparation, roller chopping would be excluded from a 35 foot-wide strip along the trails.
13. Stumps from timber harvest that are within three feet of motorized trail tread can be hazards to safe OHV operation. Timber sale staff will coordinate with recreation staff at the time of timber sales to identify potential hazard trees or stumps and develop a plan to cut or otherwise remove them.
14. Promote public information and education; such as placing kiosks and signs in key locations, public education programs, outreach, and website development, to interpret large scrub openings and scrub-jay management. Some large openings may require leaving visual buffers of young scrub oaks in key locations to partially screen portions of openings from view.
15. Promote scenic goals along paved roads, by using a 100-foot slash treatment zone in harvest units that are adjacent to paved roads in Compartments 80, 83, 214, and 215.
16. Cut material (excluding timber products) generated from timber harvesting and roller-chopping would be used to block unauthorized travel routes and system roads planned for decommissioning that occur in or adjacent to the treatment areas.

CHAPTER 3

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Background:
The almost 400,000-acre Ocala National Forest is divided for management purposes into about 300 compartments. The resource analysis area for the Central scrub project included about 45,000 forested acres in Compartments (C) 80, 81, 82, 83, 84, 85, 214, 215, 229, 230, 231, 244, 245, 246, 247, 248, 252, 253, 254, 255, 256, 257, 276, 277, 278, and 279.

The forest cover of the analysis area is predominantly sand pine and scrub oak in most of the project area with a small portion is treeless, wet prairie usually bordering small lakes and ponds. The Proposed Action detailed above (Table 2) is located within 26 compartments.

Over the last 10 years resource activities within the analysis area have included: hurricane salvage, timber harvesting, prescribed burning, site preparation, sand pine reforestation, scrub oak regeneration, road reconstruction and maintenance, road designations, road closures, maintenance of non-motorized trails, and establishment and maintenance of motorized trails.

Spatial and temporal bounds were established for the effects analysis of each resource, by estimating how far away and how long effects may persist. The alternatives were considered for their potential to directly and/or indirectly affect resources.

Direct effects occur at the same time and place as an action. Indirect effects occur at a later time and/or at a different location. The cumulative effects analysis evaluated direct and indirect effects that may overlap within this project, as well as those that may overlap with the effects of other projects (past, present, and reasonably foreseeable) within the same spatial and temporal bounds. This EA and the appended Biological Assessments (BAs) and Evaluations (BEs) were based on a review of relevant scientific information in order to consider the best available science. This section summarizes the anticipated effects.

3.1 Physical Environment – Soil, Water and Air

3.1.1. Affected Environment:

Water - Lakes on the ONF are usually clear (though sometimes darkened by tannic acid from surrounding swamps), acidic, and naturally low in phosphorus. The ONF is bounded by the St. Johns and Ocklawaha rivers and has over 600 lakes and ponds. Sinkhole ponds are common. This project falls within the Upper St. Johns (Hydrologic Unit Code 03080101) watershed. The only significant water resources within the project area are located in the southwest part of the area, referred to as the Long Pond area. Long Pond, Big Prairie, Fish Trap Pond, Round Pond and Gardner's Prairie make up a more unique part of the scrub ecosystem where small ponds and wet prairie vegetation provide important diversity within the scrub ecosystem. Water is described (pp. 3-7 through 3-15) in the Final Environmental Impact Statement (FEIS) for the FLMP. The spatial scale for the water quality analysis was set as the stands of the action alternatives and nearby adjacent water bodies, as well as the haul roads and adjacent few feet. The temporal scale was set at three years.

Soils – The vast majority of the analysis area has soil in the Astatula series. This soil is low in fertility, clay and organic matter, and is excessively drained, and not prone to compaction. Soils are described in the FEIS (p. 3-6). A comparison of soil loss and sediment yield rates with tolerable soil loss rates shows that soil loss from NFF lands falls within acceptable limits. The spatial scale for the soil analysis was set as the stands of the action alternatives, as well as the haul roads and adjacent few feet. The temporal scale was set at three years, because most of the actions that affect soils would take place within this period.

Air - Air quality in the forest is affected slightly by industry, motorized vehicle use, weather, and smoke from prescribed fire, wildfire, and debris burning by forest residents. The Forest Service works with state and federal regulatory agencies to assure air quality meets the National Ambient Air Quality Standards set by EPA. The state of Florida responded to the Clean Air Act with regulations that assure prescribed burning is in compliance with air quality standards. See the Forest Plan FEIS (pp. 3-5 and 3-6), and the NFF 2009 Annual Monitoring and Evaluation Report for information on air quality. See (Long, 1999) and (Monroe, 1999) for information on prescribed burning and air quality. The spatial scale for the air quality analysis was set as the north-central Florida counties of Lake, Marion, Putnam, and Volusia. The temporal scale was set at three years, because the actions that affect air quality would take place within this period.

3.1.2. Direct and Indirect Effects for Proposed Action, -- Alternative 2

Water: Sediment may be produced during **timber harvest**, **chopping**, and **seeding** treatments. If stands are greater than 250 feet from water, no erosion into lakes or ponds would be likely. C252 - stand 29, C278 - stands 16 and 22, and C279 - stand 1, are the only areas near water resources (see Appendix E). These stands would be protected from harvesting and chopping by project design feature 1 and the following Forest Plan Standards and Guidelines (S&Gs): FI-7, FI-8, WA-1, and WA-2. Using these protection standards, no effects are anticipated on the water resources. All other stands have no water bodies within or adjacent to their boundaries.

Light intensity **prescribed burning** would cause little or no erosion. Moderate intensity burning is capable of causing minor erosion, but soil movement out of the burned areas to water is not expected. **Road reconstruction** would have a long-term beneficial effect of erosion prevention. Road surfacing material may be moved within the immediate construction area, but would not likely contribute sediment to wetlands or waterways due to the distance from the roads. Water quality standards would be met.

Road decommissioning in the Long Pond area proposed would consist of moving debris, felling trees, installing physical barriers (gates or dirt mounds) and/or revegetation with native plants or seed. **Decomissioning** of Forest Road 05 as it is relocated out of the prairie would consist of removal of surfacing and other roadbed material, removal of culverts and any other drainage structures, installing physical barriers (gates or dirt mounds) and/or revegetation with native plants or seed. There may be some off-site movement of soil as surfacing material, surfacing, roadbed material, and structures such as culverts, are disturbed in the removal process. This negative effect would be offset by eliminating these roads from the Forest Road System and the positive effects on the water resources by reducing the potential for vehicle use in intermittent ponds and along the edge of perennial ponds.

Road construction to relocate about 3.4 miles of Forest System road from within Big Prairie and prairies around Long Pond would occur in scrub ecosystem and at least 100 feet from edge of prairies or ponds. No impact is expected at this distance from the water resource.
Based on many years of experience with similar actions on similar sites, no adverse effects on water resources are expected.

Soils: **Timber harvesting** activities such as felling, skidding, and piling (especially at log landings) would cause some soil movement and increase the erosion potential. Movement is expected to be slight as soils impacted are sands and have little slope. Compaction risk is low on these coarse sands where harvesting is proposed. Effects are short-lived and plant cover is re-established within a year. No effect is anticipated to overall soil fertility nor are any changes in nutrient cycling anticipated. **Mechanical treatment by roller chopping** would cause some soil movement and minor erosion. The blades do not turn the soil or alter the soil layers, but slice into the ground under the weight of the rolling drum. This method would not cause nutrient displacement or compaction. Chopping incorporates biomass into the soil for better nutrient release. Effects are noticeable for about 3-6 years. Overall risk to soil productivity is minimal. Overall risk to soil productivity is minimal.
Prescribed burning has both favorable and unfavorable effects on soil depending on the type and intensity of the burn. Favorable effects are the temporarily enhanced nutrient availability and phosphorus cycling. Adverse effects are caused directly by soil heating, soil erosion, and nutrient loss. Soil erosion and nutrient leaching occur indirectly during later rainstorms and cause smaller nutrient losses. Burning is expected to partly consume the litter and duff on most of the area. Soil biota is reduced from soil heating but quickly recovers. Soil erosion would be minor since soil types are Astatula and Paola sands which have a low potential erodability and since slopes in area proposed for burning average just 2-3%. We expect a minor loss of 3-5 lbs./acre of nitrogen from soil leaching and between 300-350 lb./acre of nitrogen may be released as gas from slash, litter, or duff, and topsoil. Other soil nutrients are little affected. (re to: EIS for Vegetation Management in the Coastal Plains pages IV-80 through IV-86).
Road reconstruction proposed is re-surfacing with some reshaping existing drainage ditches. These actions prevent erosion that would occur from logging trucks hauling timber products on forest roads. Reconstruction activities occur only on existing surfaced roads. There may be some off-site movement of newly laid surfacing material within a few feet of the road but well within the road corridor. For a short period after ditch reshaping, heavy rains may cause some off-site soil movement.
Road construction on about 3.4 miles proposed as part relocating part of FS Road 05 and FS Road 14-2.8 for hydrology restoration in Big Prairie and Long Pond area would require clearing vegetation and some dozer work to remove stumps and clear a travelway. About 1.4 miles of the construction work would require road surfacing to be placed on the travelway. The new road location would eliminate the negative impacts to the soil resource from vehicles adjacent to the roads' current locations.
Road decommissioning proposed on about 80 miles would consist of moving debris, felling trees, installing physical barriers (gates or dirt mounds) and/or revegetation with native plants or seed. There may be some off-site movement of newly laid surfacing material within a few feet of road to close.
Adding Level 2 roads to the transportation system from existing roads, that are currently not open to the public, would consist of signing existing unauthorized travelways and may include minimal clearing of road edge. Actions to create new roads would include tree removal in travelway.
Overall changes to road system would not impact soil resources.

Air: The air resource may be affected by **prescribed burning** from smoke. Forest Service standards for optimum burning conditions would limit any adverse effect on air quality. Effects would be short-lived and directed away from major roads, airports and large populated areas. Generally, sale units adjacent to State Road 40 would not be burned. Short-term impacts of management fires would be projected from a combination of air quality and weather monitoring to calculate emissions, smoke transport, and mixing heights. Approval from the State Department of Forestry for air quality clearance would be a standard operating procedure for these fires.

3.1.3. Cumulative Effects

Water and Soils: ***Cumulative effects*** from **harvesting** that occurs in adjacent and nearby stands over time will not be adverse as the quick vegetative response to harvesting is less than a year and erosion potential on these type soils is low. ***Cumulative effects*** are negligible as the amount of soil exposed by **chopping** is very small and recovery time is less than a year. Including this project, about 1500-3000 acres are chopped on the Ocala National Forest each year which represents less than 1% of the total acres on the National Forest. ***Cumulative effects*** from **burning** would not be adverse due to quick vegetative response after burning, low erosion potential of the soils, and the inherent infertility of scrub soils. Each year several hundred up to 1000 acres are burned after timber harvest on the Ocala National Forest. These areas are scattered over the 400,000-acre National Forest.
No cumulative effects from **road reconstruction** are anticipated as similar actions have occurred on the ONF over the past fifty years with no negative impact on water or soils. **Decommissioning roads** would contribute to the overall ***cumulative effects*** as similar work is carried out throughout the ONF on unauthorized travelways. The ***cumulative effect*** of **adding to the transportation system** is minimal as most all are existing roads that have been used either for timber sales or public access in the past. Additionally, the impact is balanced by the **decommissioning 80 miles of system roads**.

Air: Though ***cumulative effects*** could be created from the amount of **burning** done on the general forest area and on adjacent and nearby public lands, no cumulative effects are anticipated because the State regulations on smoke emissions would reduce the potential for any significant effect.

3.2 Biological Environment

3.2.1 Vegetation

3.2.1.1 Affected Environment:

The spatial scale for the vegetation analysis was set as the distribution of the scrub ecosystem on the ONF. The temporal scale was set at 10 years, because that is roughly when sand pine canopy closure begins.
The sand pine scrub ecosystem is described in the FEIS (pp. 3-15 through 3-65), the BE for the LRMP (FEIS, Appendix F), and in the 2008 Sand pine/Scrub Ecosystem Landscape Scale Assessment (p.9 and PP. 20-22). The table in Appendix H compares the current and desired sand pine age class distribution in the analysis area. Cogon grass, air potato, Chinese tallow tree, mimosa and Japanese climbing fern are non-native invasive plant species (NNIS) that are present in the project area, and would be treated prior to timber harvest. Design feature 8 would minimize the potential for introduction and spread of NNIS species.

Three federally listed plant species (Lewton's Polygala, Florida Bonamia, and Scrub Buckwheat) occur or are likely to occur in the project area. Twenty-three sensitive plant species are associated with scrub habitat or pond margin/prairie wetlands and therefore are likely to occur in the project area. Note that Amendment #10 modified the list of management indicator plant species (MIS) for the Ocala National Forest.

3.2.1.2 Direct and Indirect Effects of Alternative 2 - Proposed Action

Vegetation – General
By **timber harvesting**, **roller drum chopping**, and **prescribed burning** in older sand pine and scrub oak areas, the Proposed Action would create 41 openings totaling about 6,400 acres of young scrub habitat, representing about 2.5 % of the sand pine scrub ecosystem on the ONF. Similar actions over the last 10 years have modified about 10 % of this ecosystem forestwide. After harvest and treatments, the same composition of plant species continues to grow on the site. The changed conditions are favored by threatened and endangered plants because of the increased light levels from removal of the taller trees. Even though a few individual threatened, sensitive or endangered (TES) plants may be **chopped** and/or **burned**, they would be absent from older stands, because of shading by the canopy.

A. Before Harvest B. . Immediately after harvest C. 4-5 years after harvest

Clearcutting is proposed as the harvest method for sand pine, because experience has shown it to be the optimum harvest method. It provides early successional habitat that is essential for most scrub endemics, both plants and animals. In addition, it is the most successful harvest method to support both artificial and natural regeneration in the sand pine scrub. **Artificial regeneration** by seeding is more successful than natural regeneration due to the closed nature of sand pine cones, and the limited season that seedlings can germinate and survive the high soil surface temperatures of the scrub environment. **Post-harvest prescribed burning** consumes woody debris and reduces the density of woody shrubs allowing better growth of other non-woody species and sand pine, though it does reduce sand pine natural regeneration. It simulates the same type of disturbance that naturally occurred on these sites from infrequent catastrophic wildfires, although prescribed fire produces a much cooler fire than a catastrophic wildfire.

Log skid trails and landings are small intensively disturbed areas, where individual TES plants may be killed. It is unlikely that this would result in adverse impacts at the local population level. Design feature 2, in Section 2.3, would reduce the risk to individual TES plants at log landings. **Post-harvest prescribed burning** would stimulate germination of TES plants by scarifying seed in the soil seed bank and releasing a flush of nutrients. Many TES plants quickly re-sprout from rootstock following a fire. Sites that are naturally regenerated without site preparation would initially have more scrub oaks than areas that are artificially regenerated. Scrub oaks and sand pines compete with TES plants for space, light, and nutrients. Due to the effects of **roller chopping**, artificially regenerated openings would provide more sandy patches and have less woody debris than naturally regenerated sites.

Vegetation would not be affected by **road reconstruction or maintenance** because vegetation is not normally present in the roadway. **Decommissioning activities** would have no effect on vegetation as the roadway itself has little or no vegetation present. Roadwork and decommissioning activities would be within existing roadbeds. If non-native invasive species (NNIS) are present, the risk of further spread as a result of maintenance blading or ditch re-shaping is high. Any new or existing NNIS occurrence would receive a control treatment as soon as it is detected. Forest Service roads are surveyed annually for NNIS. **Road construction** would eliminate approximately six acres of scrub habitat from the Ocala NF. The need to relocate to establish natural hydrology and to remove roads from the hydrologically sensitive prairies outweighs the negative effects of losing scrub vegetation.

Plant communities would be protected in a variety of ways by S&Gs, design features, and monitoring. Based on many years of experience with similar actions on similar sites, the long-term beneficial effects that result from the establishment of young scrub openings greatly outweigh the short-term disturbance of vegetation being mechanically harvested, chopped and/or burned.

Vegetation – Federally Endangered or Threatened Species

The Biological Assessment for federally endangered and threatened plants is in Appendix A. This assessment determined that proposed actions may adversely affect federally listed endangered and threatened plant species, Florida bonamia, scrub buckwheat and Lewton's polygala. This effect determination simply parallels the "may [adversely] effect" determination in the 1999 LRMP. All activities, except those occurring in the Big Prairie/Long Pond area, in this proposed alternative are

also analyzed in the LRMP and are covered under the Biological Opinion for the LRMP. The portion of the project occurring in the Big Prairie/Long Pond area, which is not covered by the 1999 LRMP, would have no effect on scrub buckwheat and Lewton's polygala, and may affect, but not adversely affect Florida bonamia. Analysis of this part of the project on listed plants is in Appendix A.

It is also highly unlikely for any of the three species to be impacted by **harvest** and **chopping** operations due to the low probability of its occurrence in mature sand pine habitat, which lacks suitable habitat conditions for the species. The adverse effects would be from the potential for individuals that may occur to be killed by **roller-drum choppers**. However, Bonamia is adapted to disturbance and can persist via its persistent root system and extensive seed banks in the soil. **Roller-chopping** and **seeding** operations may disturb the horizontal stems of Florida Bonamia individuals, but the root systems would remain intact and individuals could resprout. The 1999 LRMP states that individual Lewton's polygala (LP) plants "could be killed by ground-penetrating mechanical site preparation" but that the number of individuals "would be insignificant as these would be chance encounters". The distribution of LP within scrub stands such as those in this proposed action are often scattered and isolated – thus the chances of multiple individuals being directly affected by any chopping operations is very small. Adverse effects to scrub buckwheat exist because there is some potential for individuals to be killed by **roller-drum choppers** or **prescribe burns** under certain unintended conditions. Mortality occurrence is expected to be insignificant due to the species' woody taproot and persistence after fire.
Indirect effects from **harvesting** and the removal of a sand pine overstory would indirectly benefit all three species by increasing sunlight penetration to the ground and creating an open environment with large patches of bare ground. **Roller-chopping** would promote bare ground openings by decreasing coarse woody debris. **Prescribed burning** would create openings and stimulate flowering and germination.
The Biological Evaluation for Federally Threatened and Endangered Species is in Appendix A. Consult Appendix A for a more detailed effects analysis.

Vegetation – Sensitive Species
Scrub --The sensitive species associated with sand pine scrub habitat are herbaceous/ground cover or shade-intolerant understory plants that require open habitat conditions (e.g., lack of a canopy, open mostly bare areas of sand). Therefore it is unlikely that harvest operations would impose significant direct impacts on these species since it is unlikely that they would occur in the harvest areas, which have developed canopies. **Roller-chopping** and prescribed burning present some risk of direct impact to scrub-associated sensitive species, but most scrub endemic species possess a hardy bulb or other underground root structure that allow the plants to resprout after disturbance. **Roller-chopping** and **prescribed burning** would reduce the coarse woody debris left behind by harvest operations, creating open conditions. **Prescribed burns** of moderate intensity would create a flush of nutrients for plants. **Timber harvest** following by **prescribed burning** and a rain event could cause minor erosion in some areas with leaching of nutrients. Burning would likely increase germination and stimulate re-sprouting and growth in fire-adapted sensitive species. **Reforestation** activities would be unlikely to cause any direct impacts because the process creates very minor physical disturbance, and the scrub-adapted species and colonizing plants are adapted to disturbance. **Road work** performed for support of harvest operations may introduce some risk of direct impacts to individual plants occurring near road edges being pushed or trampled during roadwork. Previously closed roads that will be opened will experience increased disturbance.
This assessment determined that for the nine scrub-associated species the proposed action "may impact individuals but would not be likely to result in a trend towards federal listing or loss of viability". The proposed treatments present only a limited amount of risk of direct impacts to individual plants, much less pose any risk to the greater localized populations of these sensitive species. Indirect impacts are mostly beneficial and any negative effects are attributed to natural successional changes. Over the long term and landscape-level, management will provide a variety of age classes within sand pine scrub habitat.

Wetlands -- The only parts of the proposed project that would impact wetland habitat are the **road decommissioning** and **relocation** actions in the Long Pond and Big Prairie areas. All other activities are within the sand pine scrub ecosystem and will not impact wetland plant species.
Road decommissioning activities would not create any impacts on sensitive wetlands plant species because the areas of concern have already been denuded of vegetation. **Revegetation** of these areas will benefit any sensitive wetlands plants in the surrounding area by stabilizing soil and improving water retention in the immediate area, thereby promoting colonization.
The proposed action would have a beneficial impact upon the fourteen sensitive wetland plant species.

The Biological Evaluation for Regional Forester's Sensitive Species is in Appendix B. Consult Appendix B for a more detailed effects analysis on sensitive plant species.

3.2.1.3 Cumulative Effects

Cumulative effects from **harvesting**, **chopping** , **burning**, **seeding** sand pine come from similar actions being carried out in adjacent compartments and in different years. The harvesting and supporting road work planned in this EA represents the amount of timber harvesting, chopping, and seeding that usually occurs on in two to three years on the ONF. Similar actions are being carried out on other parts of the Forest in preceding and subsequent years. All of these actions make up the cumulative effects for treatments. Though there have been no long-term studies about the effects of harvesting and related actions in the scrub at this scale, the ONF has been using this type of management in sand pine scrub since the 1950's. Botanical surveys and ecological inventories done in recent years have found the same species composition and abundance as had been found in earlier surveys. Several TES species are common and even abundant on the ONF. It does not appear that any negative cumulative effects to plant species has occurred or would occur from the proposed action.

3.2.2 Wildlife

3.2.2.1 Affected Environment:

The analysis area for this project is primarily sand pine scrub. Wildlife communities and habitat are described in the FEIS for the 1999 Revised LRMP (pp. 3-66 through 3-98) and in the 2009 Sand Pine/Scrub Ecosystem Landscape Scale Assessment (pp. 22-35).

The affected environment is described in the 2009 Sand pine/Scrub Ecosystem Landscape Scale Assessment (pp. 22-35) and the BE for the LRMP (FEIS, Appendix F). Three federally listed threatened species (Florida Scrub-Jay, Eastern Indigo Snake, and Sand Skink) occur or are likely to occur in the project area. Ten sensitive species (Florida Mouse, Florida sandhill crane, Florida pine snake, Sherman's Fox Squirrel, Florida Black Bear, Gopher Tortoise, Scrub Lizard, Short-Tailed Snake, Striped Newt, and Round-Tailed Muskrat) occur or are likely to occur in the project area. Two Management Indicator Species (MIS; Florida Scrub-Jay and Scrub Lizard) occur within the project area. Note that Amendment #10 reduced the list of MIS wildlife species for the Ocala National Forest. Also see the 2010 Monitoring and Evaluation Report for population and trend data on MIS.

3.2.2.2 Direct and Indirect Effects of Alternative 2 - Proposed Action

The Proposed Action would move 52 stands of sand pine or scrub oak into 33 openings of young habitat, representing about 2.5 % of the sand pine scrub ecosystem on the ONF. Similar actions over the last 10 years have modified about 10% of this ecosystem.

General Wildlife Effects:

The primary effect would be changes in wildlife habitat as affected by stand age. Immediately following sand pine **harvest**, the pine seeds that are exposed would provide food for small mammals and ground-foraging birds, such as quail, turkey, and dove. Within a year after project completion the sites would provide browse plants and soft mast. After two years the sites would also provide highly abundant, seasonally persistent hard mast to benefit herbivorous and omnivorous wildlife species. As the oak height increased the scrub would be valued as bedding sites by deer, nesting sites for shrub-dwelling birds such as common yellowthroats, and cover and den habitat for more secretive species such as bobcat and Florida black bear.

Removal of mature sand pine forest would reduce nesting and foraging habitat for some species of migratory birds, such as great-crested flycatchers, American robins, and yellow-rumped warblers, but would increase nesting and foraging for other species, such as ovenbirds and southeastern kestrels. The standard practices of snag retention in clearcuts alleviate some of the impacts of tree removal on cavity nesting birds.

Harvest areas would provide herpetofauna that require early successional scrub with habitat from 1-2 years after project completion, until reduction of basking sites from increasing tree growth forces them to relocate (about 5-10 years).

The standard practices of snag retention in clearcuts (Forest Plan Standards and Guidelines, S&G VG-26) alleviate some of the impacts of tree removal on cavity nesting birds.

Southeastern kestrels and screech owls would move to the 1-year old clearcuts and occupy it until thick vegetation made obtaining prey difficult (about 5 years). Regeneration areas of the ONF provide important nesting habitat for the

southeastern kestrel in stands where nesting cavities or nesting boxes are available. Forest Plan S&Gs WA-1 and WA-2 would protect wildlife habitat next to ponds and lakes.

Management Indicator Species (MIS):
Effects on the Florida Scrub-Jay, which is also a Federally listed Threatened Species, are discussed in detail in the Biological Assessment in Appendix A. Effects on the scrub lizard, which is also a Sensitive Species, are discussed in detail in the Biological Evaluation in Appendix B.

Federally Listed Threatened and Endangered Species (TES): Effects on Threatened and Endangered species are discussed in detail in the Biological Assessment (BA) in Appendix A. The BA determinations for federally listed species are: *likely to adversely affect* the Eastern Indigo Snake and Sand Skink; and *not likely to adversely affect* the Florida Scrub-Jay and the Wood Stork. Even though habitat diversity would be improved, the determination of *likely to adversely affect* for the Eastern Indigo Snake was made, because there is some potential for individuals to be directly impacted by heavy machinery during **harvest**, **site preparation**, and **road obliteration** activities. Even though habitat quality would be improved after harvest, the determination of *likely to adversely affect* the Sand Skink was made, because there is a small risk of mortality. These *likely to adversely affect* determinations reflect the previous determinations made in the Biological Opinion for the LRMP.

The portion of the project occurring in the Big Prairie/Long Pond area, which is not covered by the 1999 LRMP, would have no effect on the Wood Stork and Eastern Indigo Snake, and may affect, but not likely adversely affect the Florida Scrub-Jay and Sand Skink. Based on these effects determinations, no additional formal consultation is required for the additional portion of the project that is not covered by the LRMP. Consult Appendix A for a more detailed effects analysis.

Regional Forester's Sensitive Species: Effects on Regional Forester's Sensitive Species are discussed in detail in the Biological Evaluation (BE) in Appendix B. The BE determinations for sensitive species are: *may impact individuals but would not be likely to result in a trend towards federal listing or loss of viability* for the Florida mouse, Florida black bear, scrub lizard, short-tailed snake, Sherman's fox squirrel, gopher tortoise, round-tailed muskrat, and striped newt; and a *beneficial impact* for the Florida sandhill crane and Florida pine snake. Consult Appendix B for a more detailed effects analysis.

Road reconstruction would have no effect on wildlife as the road work would be within existing roadbeds. **Road decommissioning** would benefit wildlife by reducing access by humans. Negative effects of **road construction** would be balanced by relocation of road bed from ecologically sensitive prairie area and moving it to the scrub.

3.2.2.3 Cumulative Effects

Cumulative effects from **harvesting**, **chopping** , **burning**, **seeding** sand pine come from similar actions being carried out in adjacent compartments and in different years. The harvesting and supporting road work planned in this EA represents the amount of timber harvesting, chopping, and seeding that usually occurs on in two to three years on the ONF. Similar actions are being carried out on other parts of the Forest in preceding and subsequent years. All of these actions make up the cumulative effects for treatments. Though there have been no long-term studies about the effects of harvesting and related actions in the scrub at this scale, the ONF has been using this type of management in sand pine scrub since the 1950's. It does not appear that any negative cumulative effects to wildlife species has occurred or would occur from the proposed action. Based on many years of experience with similar actions on similar sites, the long-term beneficial effects on TES wildlife that would result from the establishment of early successional scrub habitat would greatly outweigh any short-term adverse effects from disturbance, displacement or mortality.

3.3 Social Environment

3.3.1 Recreation

3.3.1.1 Affected Environment

Recreation resources located adjacent to proposed treatment areas include Big Scrub Campground, Centennial OHV Trail, LAM Horse Trail and 100-Mile Horse Trail.

3.3.1.2 Direct and Indirect Effects for Proposed Action

Recreation would be temporarily affected by the activities of the proposed action. Recreation activities associated with the project areas include horseback riding, camping, and OHV riding. These activities would be temporarily interrupted during project implementation in the treatment areas due to noise from heavy equipment. Project Design Criteria # 12, 13 and 14, in Section 2.3, would lessen the effects for trail riding. It is expected that the treatment of each stand would be accomplished in thirty days or less and all areas would be treated over a period of five years. Treatment would generally occur during the week when visitation rates are lower. Other trails and camping opportunities on the ONF would not be interrupted during project implementation. **Road reconstruction** includes renewing the road surface shape and adding surfacing material to support increased traffic from timber harvesting. There would be a negative visual effect during reconstruction activities and for 3-6 months afterwards but a positive effect to recreational use of the roads. **Road construction** and subsequent relocation of FS 05 from Big Prairie and FS 14-2.8 away from the immediate perimeter of Long Pond, Fish Trap Pond, Round Pond and their associated wet prairies would also relocate about 3 miles of designated Horse Trail. Though horseback riders may prefer the old trail location from a visual standpoint, the new trail location would prevent damage to the prairie soils, protect the water resource, and allow better prescribed burning of the prairies.
Road Decommissioning activities would range from blocking road entrances to scattering logging slash to reshaping natural contours. Initially, these actions may have a negative impact on scenic values, especially in the Long Pond area. Effects would be short term, 3-6 months, and the long term effect would be positive as the forest takes on a more natural appearance after the roads become obliterated. Most all of the roads to be decommissioned are Level 1, Closed Roads, so there would be only a slight impact from prior recreational use of these roads. Most of the Level 2, Open to the Public, roads selected for decommissioning were not being used and had already started to grow over with vegetation.

3.3.1.3 Cumulative Effects

There are no other known activities that would affect recreation during the treatment period that would have combined effects with the proposed action. There should be no cumulative effects to recreational activities associated with the project implementation. All recreational activities may resume following treatment of each stand.

3.3.2 Human Health and Safety

This section discusses the health and safety effects related to recreational users in the area at the time of project implementation and to workers carrying out the treatments.

3.3.2.1 Direct and Indirect Effects for Proposed Action

Vehicle and heavy equipment use pose the only hazards to public safety. Visitors would be affected by increased vehicle use on forest roads during harvesting and other treatments. OHV riders may be impacted by harvesting and other treatments on areas next to project areas. These hazards are mitigated by project design criteria (12 and 13) in section 2.3, timber sale and contract specifications for safety, and state traffic laws.

Project personnel would be aware of increased vehicle use on forest roads during harvesting and other treatments. Forest Service employee safety programs address defensive driving and road hazards regularly.

3.3.2.2 Cumulative Effects

Activities occurring on the ONF increasingly involve motorized vehicles and equipment. Though driving hazards are ever present on the ONF, any additional vehicle activity would have a cumulative effect to human health and safety.

There are no other activities that would have a combined effect on public health. Overall cumulative adverse effects to human health and safety associated by project activities would be small.

3.3.3 Environmental Justice and the Protection of Children

The proposed action was assessed to determine whether it would disproportionately impact minority or low-income populations (in accordance with Executive Order 12898) from environmental and health hazards. It generally applies to actions that could cause soil, water or air pollution or actions concerning hazardous or animal waste disposal, or chemical

application and storage. Proposed actions for this project would not cause or propose any of these.
The percent of minority and low-income populations in Marion County (11.8 and 13.6 percent, respectively) is less than or similar to the State of Florida (16 and 11.7 percent, respectively) based on 2000 census data. This demographic information indicates that this county does not qualify as an environmental justice community. Therefore, no further analysis is required.

3.3.4 Economic Effects

3.3.4.1 Affected Environment

The socioeconomic environment is described in the FEIS for the 1999 Revised LRMP (pp. 3-189 through 3-225). The spatial scale for the economic analysis was set as Marion and Lake counties, because the Proposed Action would result in tangible benefits mostly to companies and individuals in those areas. The temporal scale was set at three years following harvest, because the actions that affect economics would generally take place within that period.

3.3.4.2 Direct and Indirect Effects for Alternative 1

A financial efficiency analysis of the action alternatives is summarized below. This analysis compared estimated expenditures with financial returns, and followed guidelines in the Forest Service Timber Sale Preparation Handbook (FSH 2409.18_30).

Table 9. Summary of Financial Efficiency Analysis - Alternative 1

Benefit/Cost Category	Discounted Short-Term Existing Stand	Discounted Long-Term Regeneration Stand	Both Stands
REVENUE			
Timber Sales	2299051	451004	2,750,055
TOTAL REVENUES	2299051	451004	2,750,055
FINANCIAL COSTS			
Analysis (NEPA)	19269	2819	22,088
Other Resource Support	19269	4172	23,441
Sale Preparation	149438	31273	180,711
Sale Administration	172429	31273	203,702
Road Work	521903	72217	594,120
Reforestation	714349	144802	859,151
TOTAL COSTS	1596657	286555	1,883,212
Financial Present Net Value	**702394**	**164449**	**866843**
Benefit/Cost Ratio	**1.44**	**1.57**	**1.46**

Alternative 2 would contribute beneficial effects from revenues and payments to contractors, but would not measurably change employment, income or population in and around the ONF. Full analysis is shown in Appendix I. Based on many years of experience with similar actions, no adverse effects on the socioeconomic environment are anticipated.

3.3.5 Heritage Resources

3.3.5.1 Affected Environment

The sand pine scrub environment is considered the very lowest potential for archeological or historical sites on the ONF. This is primarily due to the extremely arid conditions of this environment. The stands proposed for this project are primarily located within the desert-like conditions of the deep sand pine scrub ecosystem of the ONF. Spatial and temporal effects scales were not established for the heritage resource, because no direct or indirect effects are anticipated. Heritage resources are described in the FEIS (pp. 3-101 through 3-105).

Survey of heritage resources in the project area by the Ocala National Forest archeologist was completed. Findings will be located in a FY-14 Heritage Resources report prepared by the Ocala Archeologist and is administratively confidential. During the heritage resource survey, heritage resources sites were identified. Heritage resources identified and deemed significant enough for potential inclusion in the National Register of Historic Places would be avoided during project implementation.

The State Historic Preservation Officer and the Tribal Historic Preservation Officers will review the proposed project to determine if there would be a negative effect on heritage resources.

CHAPTER 4

4.0 CONSULTATION AND COORDINATION

Consultation and Coordination

The Forest Service consulted the following individuals, Federal, State, and local agencies, tribes and non-Forest Service persons during the development of this environmental assessment:

Federal, State and Local Agencies
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Tribes
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CHAPTER 5

5.0 LIST OF PREPARERS

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Appendix A – Biological Assessment

Biological Assessment
for the
Central Scrub Project

On the Ocala National Forest

Marion County, Florida
February 14, 2014

Prepared by: _____ Date: _____

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EXECUTIVE SUMMARY

The Ocala National Forest is proposing to implement the Central Scrub project to create 6,400 acres of new scrub opening which would provide habitat for the largest remaining population of Florida Scrub-Jays. This project is needed to meet continued habitat needs of the Florida Scrub-Jays on the forest. Additionally, the project proposes to redirect part of the road system that disrupts the hydrology of two large wetland areas to help protect vital habitat for striped newts. This project includes the following proposed actions:

- Create about 6,400 acres of habitat for the Florida Scrub-Jay through timber sales, mechanical treatments, and prescribed burning.
- Perform road maintenance and reconstruction to support harvest operations.
- Change existing road system throughout the project area by decommissioning roads, relocating existing roads, and adding existing roads to the forest road system.
- Restore natural hydrology of the Long Pond/Big Prairie area by relocating forest roads to bypass Big Prairie and Long Pond prairie. The relocation would require new road construction on about 3.3 miles.

The proposed activity on the Long Pond/Big Prairie wetland area (the only activity outside the scope of those described in the Revised Land and Resource Management Plan (LRMP)) was determined to have either "no effect" or "may affect – not likely to adversely affect" effects determinations for listed species, and thus no formal consultation is required for the additional portion of the project that is not covered by the LRMP.

The Biological Assessment of this project has yielded the following effects determinations for federally listed animal and plant species known or potentially occurring in the project area:

Common Name	Scientific Name	Effects Determination
Florida Scrub-Jay	*Aphelocoma coerulescens*	May affect, not likely to adversely affect
Wood Stork	*Mycteria americana*	No effect
Eastern Indigo Snake	*Drymarchon corais couperi*	May affect, likely to adversely affect
Sand Skink	*Neoseps reynoldsi*	May affect, likely to adversely affect
Florida Bonamia	*Bonamia grandiflora*	May affect, likely to adversely affect
Scrub Buckwheat	*Eriogonum longifolium* var. *gnaphalifolium*	May affect, likely to adversely affect
Lewton's Polygala	*Polygala lewtonii*	May affect, likely to adversely affect

The above effects determinations are the same as the determinations reached in the Revised LRMP with the exception of the determination reached for the Florida Scrub-Jay. The effects determination for the Florida Scrub-Jay differs in this project from that reached in the LRMP ("may affect, likely to adversely affect") because the action identified as creating the potential for adverse effects (prescribed burning in suitable scrub-jay habitat) does not occur in this project. The "may affect, likely to adversely affect" determinations for the Eastern Indigo Snake, Sand Skink and the three plant species are the result of the presence of post-harvest ground-penetrating activities (particularly roller-chopping) in project stands. While this does have the potential of direct effects on individuals, habitat improvements are essential to supporting and sustaining populations of endemic species adapted to early-successional habitats.

Although the five species above received "may affect, likely to adversely affect" determinations, the activities connected with this project are consistent with those covered by the previous formal consultation on the Revised LRMP (USFWS 1999, FWS Log #98-891). As a result of those previous consultations, the Fish and Wildlife Service issued a non-jeopardy Biological Opinion (FWS-Log #98-981) establishing incidental take authorizations. Since this project is consistent with previous formal consultations, no additional formal consultation is required.

1.0 INTRODUCTION

This Biological Assessment documents the analysis and rationale for the determination of effects for a specific planned Forest Service (FS) activity on federally threatened, endangered, or sensitive (TES) wildlife species. The Biological Assessment serves to: ensure that FS actions do not contribute to loss of viability or trends towards Federal listing for all TES species; comply with requirements of the Endangered Species Act of 1973 (ESA) that actions of Federal agencies not jeopardize the continued existence of listed species or adversely modify critical habitat of listed species; and provide a process and standard by which to ensure that threatened, endangered, proposed, and sensitive species receive full consideration in the decision making process. Consult the Forest Service Manual, Section 2672.4 for a detailed discussion on objectives and standards for Biological Assessments.

This Biological Assessment (BA) considers the potential effects of the Central Scrub Project on Threatened, Endangered, and Proposed (TEP) wildlife species. The best available science on TEP wildlife species was used to document this consideration of potential effects, including recent scientific literature, correspondence with knowledgeable individuals in scientific/land management professions, field surveys, and personal observation. Recent scientific literature used in the document is included in the references section.

The wildlife and plant species addressed in this document were selected from the Federally Listed Species in Florida from the USFWS (Table 1). Although not federally listed, the Bald Eagle was included in the initial analysis to communicate compliance with the Bald and Golden Eagle Protection Act, but an in-depth analysis was not warranted due to a lack of active or alternative nests occurring closer than 660 feet to a proposed treatment stand. Section 7 contains four listed species that occur in or near the Ocala National Forest (ONF) but were excluded from analysis within the document because the project area does not contain suitable habitat or is outside the known range of the species.

Table 1. Federally Listed Wildlife and Plant Species Included in Analysis

Taxa	Scientific Name	Common Name
Bird	*Aphelocoma coerulescens*	Florida Scrub-Jay
Bird	*Mycteria Americana*	Wood Stork

Reptile	*Drymarchon corais couperi*	Eastern Indigo Snake
Reptile	*Neoseps reynoldsi*	Sand Skink
Plant	*Bonamia grandiflora*	Florida Bonamia
Plant	*Eriogonum longifolium* var. *gnaphalifolium*	Scrub Buckwheat
Plant	*Polygala lewtonii*	Lewton's Polygala

2.0 CONSULTATION HISTORY

In accordance with the Endangered Species Act of 1973, as amended, and pursuant to Section 7 of said act, formal consultation on the Biological Assessment for the Revised Land and Resource Management Plan for National Forests in Florida was requested by the Regional Forester in a letter dated September 18, 1998 (USDA Forest Service 1999). On December 18, 1998, the U.S. Fish and Wildlife Service issued a Biological Opinion on the Revised Land and Resource Management Plan.

The Biological Opinion concurred with the Forest Service's "not likely to affect" determination for 13 federally listed species, and provided terms and conditions for incidental take for five wildlife species that received a "may affect" determination. The Biological Opinion also stated that the "level of anticipated take [was] not likely to result in jeopardy to the species" for the Florida Scrub-Jay, Red-cockaded Woodpecker, Eastern Indigo Snake, Sand Skink, Flatwoods Salamander, and Flatwoods Salamander critical habitat (USDA Forest Service 1999). Issuance of the Biological Opinion concluded all formal consultation on the Revised Land and Resource Management Plan for National Forests in Florida.

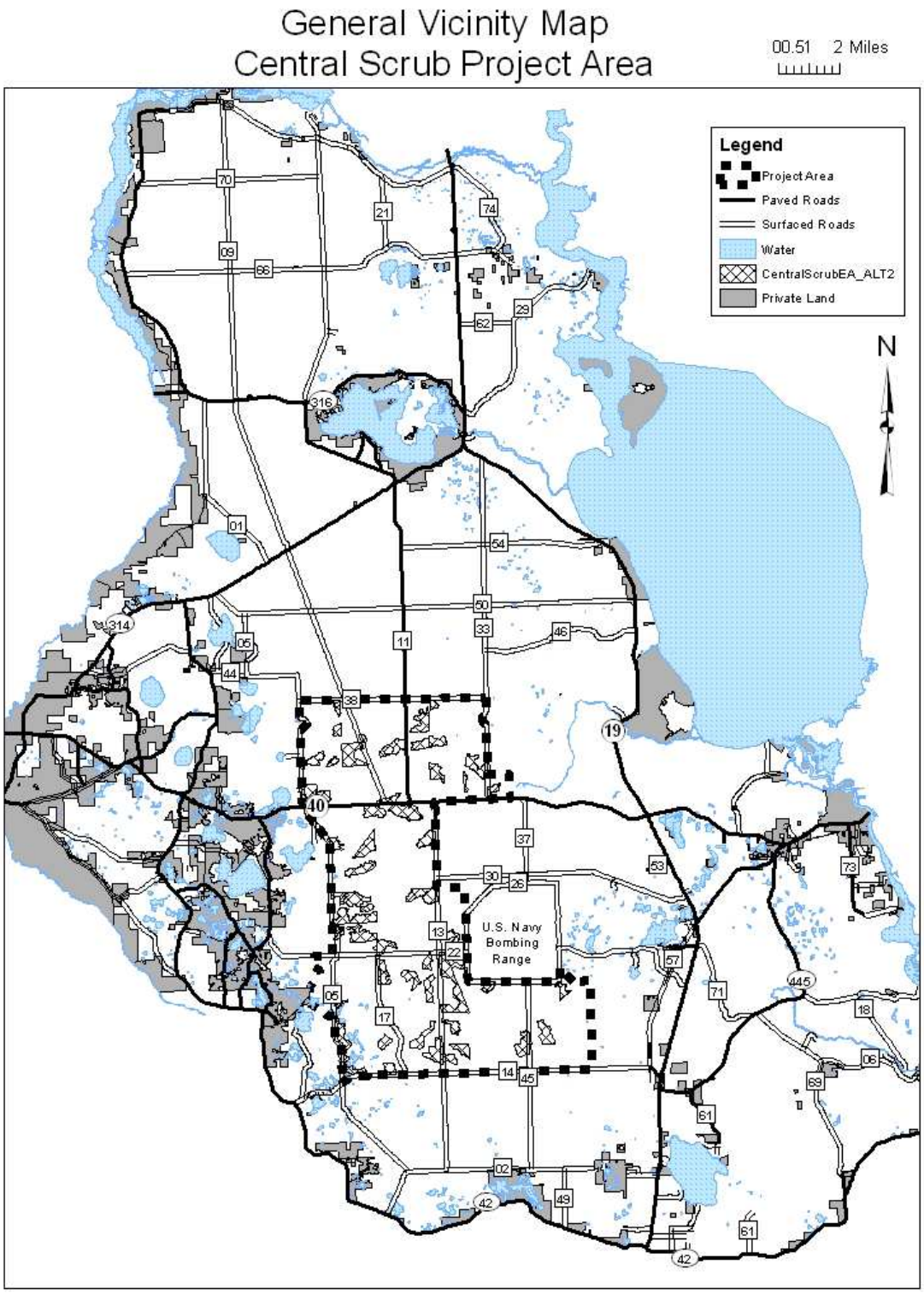
3.0 PROPOSED ACTION

The Ocala National Forest is proposing to implement the Central Scrub Project (see Maps 1 – 4). The project would create about 6,400 acres of new scrub openings and includes wildlife, fuels, forest products, timber management, road maintenance and prescribed burning for site preparation in some harvested units. In addition, the project would occur in the Long Pond/Big Prairie wetland area to restore the natural hydrology by rerouting forest roads outside of the wetland area. Finally, the project would include changing existing road system includes decommissioning activities which may include installation of barriers and/or revegetation. The proposed actions are described below and evaluated with regard to their potential effects on federally listed species.

The majority of this project is located within Management Area 8.1 (Sand Pine, Natural Regeneration, Large Openings) and Management Area 8.2 (Sand Pine, Mixed Regeneration, Moderate Openings). Two compartments (247 and 248) are located within Management Area 8.4 (Scrub-Jay Management Area). Note that changes in the desired condition for MA 8.1 and two guidelines (8.1-4 and 8.1-6) and MA 8.2 and two guidelines (8.2-5 and 8.2-7) have been implemented under LRMP Amendment #8. Also refer to the Amendment 8 Replacement Pages for the changes to the Desired Future Conditions (available at http://www.fs.usda.gov/detail/florida/landmanagement/?cid=stelprdb5269794).

The goals of the Central Scrub Project are to perpetuate the sand pine scrub ecosystem and restore natural processes to fragmented prairies and to provide early successional scrub habitat and large, undisturbed prairies for the Florida Scrub-Jay, Sand Skink, Indigo Snake, Gopher Tortoise, Florida Bonamia, Wood Stork and other species dependent on these habitats.

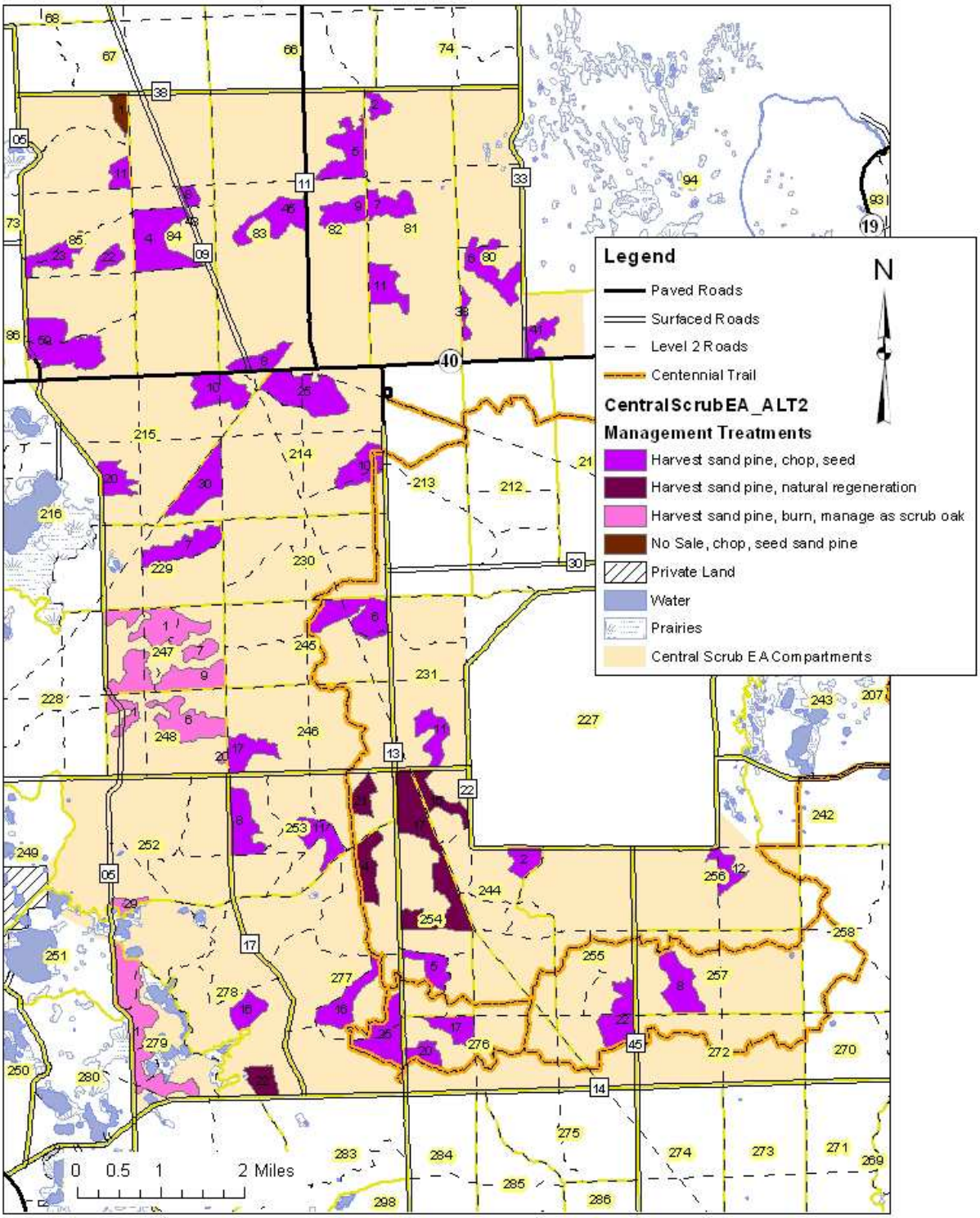
Map 1



Map 2

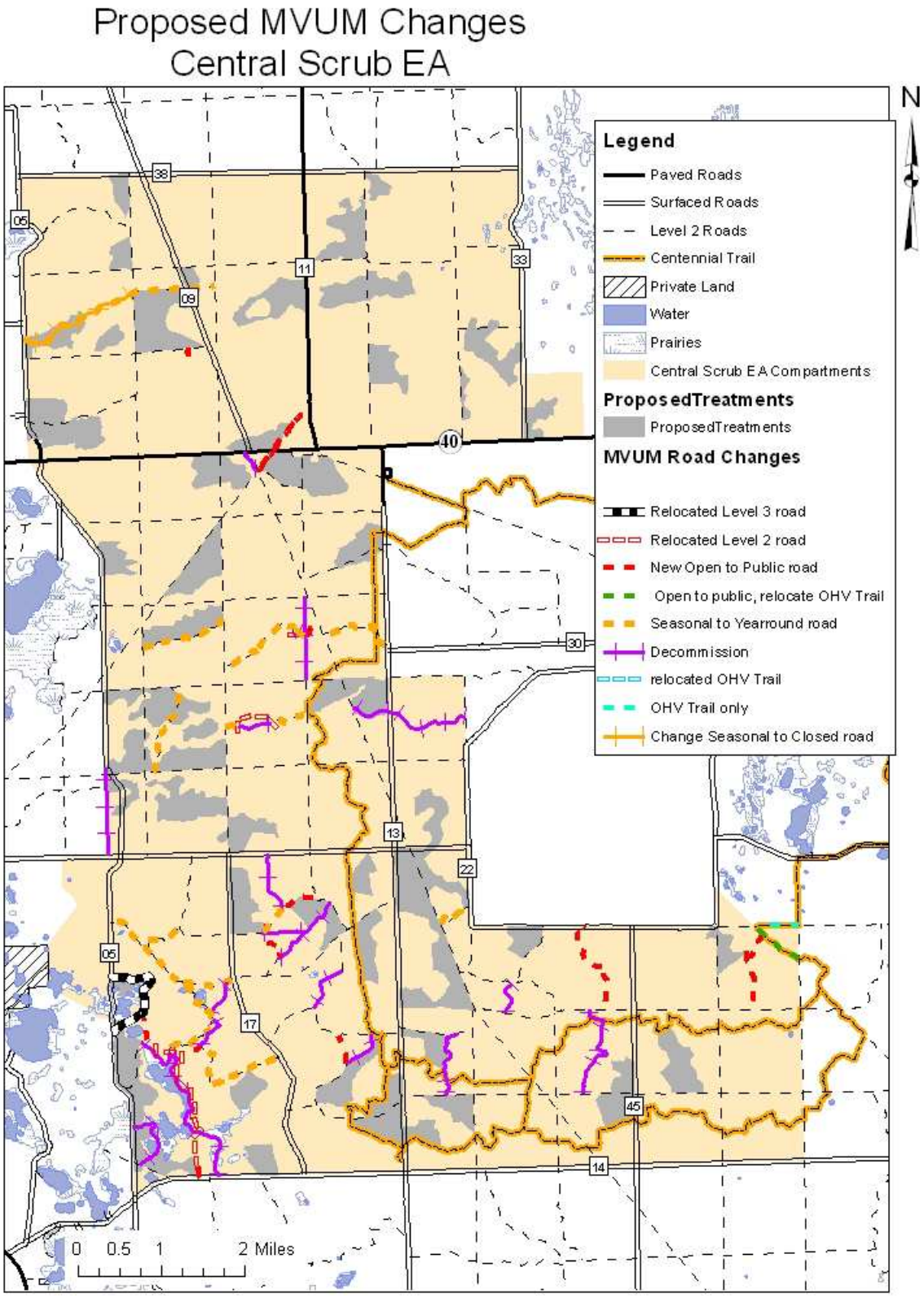
Proposed Timber Harvest areas and Treatments

Compartment and Stand Numbers Shown



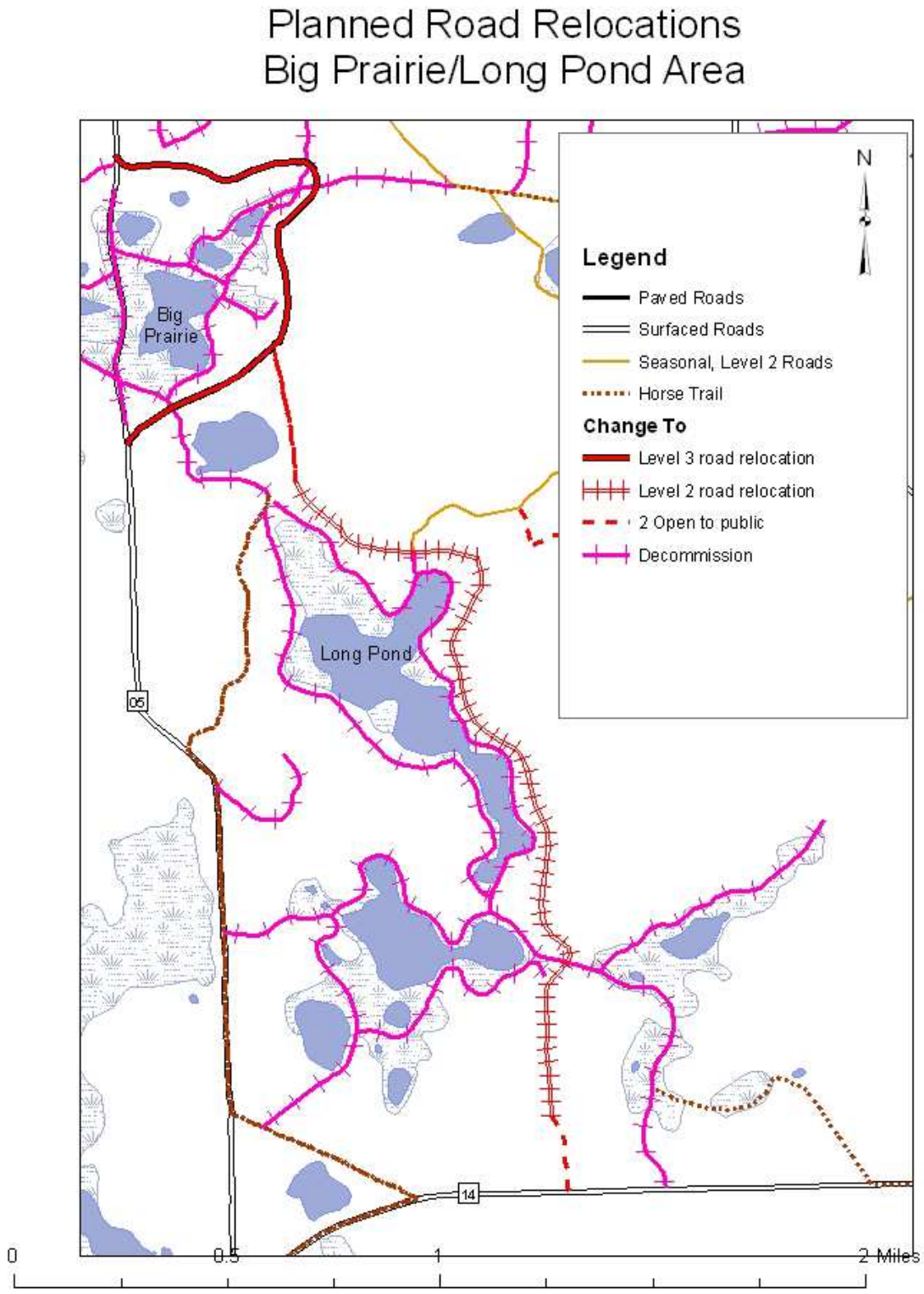
Map 3

Proposed Road System Changes – to Forest Service Roads that are presently Open to the Public



Map 4

Planned Road Relocations Around Big Prairie and Long Pond Area



3.1 Proposed Action

The activities described for the proposed action are proposed for an area located on National Forest lands in Marion County, Florida and involve a total of 6,400 acres in 52 stands within 26 compartments on the Lake George Ranger District and the Seminole Ranger District. (Note that some stands may have more than one proposed action occurring within their boundaries.)

The proposed actions are:

- Harvest crookedwood and merchantable sand pines on approximately 4,457 acres and follow with prescribed burning and/ or roller-chopping, and seed with sand pine.
- Harvest crookedwood and merchantable sand pines on approximately 751 acres and allow to naturally regenerate.
- Harvest sand pine on approximately 1,123 acres, followed with prescribed burning and change management to scrub oak.
- Roller-chop, prescribe burn and seed 54 acres with sand pine.
- Perform road work to support harvest operations, mostly resurfacing with some reshaping of existing road surfaces.
- Perform road re-designation to decommission about 80 miles of road from the minimum road system; add about 11 miles of existing unauthorized roads to the minimum road system; change about 14 miles of Seasonal roads to Open Year round; change about 0.7 miles of OHV Trail to Level 2, open to the public. OHV Trail would be relocated to nearby, existing closed road; change designations on about 5 miles of system roads to improve overall access to the public.
- Restore natural hydrology of the Long Pond/Big Prairie area by relocating the Forest Road 05 to bypass Big Prairie by relocating about 0.7 miles of Level 3 road, and relocating about 2.1 miles of Forest Road 14-2.8 from around the Long Pond prairie system. The relocation would require new construction of about 3.3 miles of road.

Proposed Actions in Detail

Harvest of crookedwood and sand pine. Stands of merchantable sand pine would be sold in fiscal year 2015 and/or 2016, and harvest activities must occur within three years of sale. Crooked wood (*Lyonia ferruginea*) harvests may be conducted in project stands prior to harvest via permit. During crookedwood harvest activities, the trunks of the crookedwood plant are cut at the base. The rhizomatous stems grow back after cutting.

Roller-chopping. This site preparation method uses large drums with 0.75 to 1.0 inch long blades that are spaced 12 to 18 inches apart. Chopper blades sink 8 to 10 inches into the soil and typically disturb 90% of vegetation less than 6 inches in diameter. Chopping breaks down post-harvest logging debris, prepares the seed bed, and moderates oak resprouting. A roller-chopping layout that leaves intermittent areas of undisturbed vegetation (i.e., the "sloppy chop") is encouraged to promote small-scale habitat variability. Roller-chopping treatments would be performed within 18 months of harvest.

Note that approximately 54 acres of sand pine scrub are proposed to be chopped and seeded, with no preceding harvest operations. These areas do not contain enough sand pine for a commercial harvest.

Prescribed burning. Post-harvest prescribed burns are conducted to benefit various TES species by providing effects such as decreasing coarse woody debris and improving germination and resprouting of fire-adapted plant species. The effects of prescribed burning on TES species are also addressed in the Biological Evaluation of the Effects of Prescribed Burning on Proposed, Endangered, Threatened and Sensitive Wildlife Species (USDA 2006). Prescribed burning provides open areas for scrub-jays and mimics some of the natural effects on plant dynamics that historically came from wildfires.

Reforest sand pine scrub. Regeneration activities (seeding) would be carried out within 12 to 15 months of harvest and would occur after roller-chopping or prescribed burning activities. Seeding uses a farm tractor with attachments that drop sand pine seeds in an arrangement providing 6' x 8' spacing throughout the stand. Cables on the front and back of the tractor prepare the soil and cover up the seed after it is dropped. In stands that appear to have sufficient natural regeneration, no seeding will occur, or every other row will be seeded.

Change management type to scrub oak. Seven stands containing 1,123 total acres will move from management type "sand pine" to "scrub oak". These stands will undergo harvest operations but will not be seeded back to sand pine. They will be managed as scrub oak stands and will be burned periodically.

Perform road work. Roads necessary to support harvest operations will be resurfaced or reshaped to support logging trucks. Clay or rock may be added to some areas and ditches may be re-pulled.

Add, decommission, and reclassify Forest Service system roads. As part of the proposed action, some changes will be made to the Forest Service system roads within the project area. For reference, Level 1 roads are closed between intermittent uses and maintained only to prevent resource damage. These roads are not shown on motor vehicle use maps. Level 2 roads are open for high-clearance vehicles where traffic usually consists of one or a combination of administrative, permitted, dispersed recreation, or other specialized uses. Decommissioning roads means to "restore roads to a more natural state," which can include activities ranging from simply blocking the entrance to the road or scattering slash on the roadbed to completely eliminating the roadbed by restoring natural contours and slopes. For detailed definitions of Level 1 & 2 roads, refer to the Forest Service Handbook, Section 7709.59, Chapter 60.

Road Additions. 11 miles of unauthorized roads are proposed to be upgraded to Level 1 and Level 2 Roads classification and added to the MVUM system. Fifty percent would be added to the MVUM system as Level 1 Roads (closed) and 50% would be added as Level 2 Roads (Open to Public). These proposed roads currently exist as unauthorized travel ways that were previously left off the roads system, but have subsequently been determined to be beneficial for Forest Service operations and/or public use.

Road Decommissions. 80 miles of roads in the MVUM system are proposed to be decommissioned. This includes 65 miles of Level 1 Roads (closed) and 15 miles of Level 2 Roads (Open to the Public)

Road Relocations. 3 miles of road would be relocated around Long Pond and Big Prairie (see below) to provide a 100 ft buffer between roads and prairies. In addition, 0.7 miles of OHV trail would be rerouted through existing road systems.

Changes to Road Designations. 14 miles of Seasonal Roads would be changed to Open Year Round roads.

With the exception of the proposed activities in the Long Pond/Big Prairie area, all proposed actions described above in the current project are consistent with and do not exceed the scope of activities described within the Revised LRMP and subsequent amendments. The activities in the Long Pond/Big Prairie were determined to have either "no effect" or "may affect – not likely to adversely affect" effects determinations for listed species, and thus no additional formal consultation is required for the additional portion of the project that is not covered by the LRMP.

Restore natural processes in two wetland areas

During the process of reviewing the status of the forest road system within the project area, the roads in the Big Prairie and Long Pond areas were identified as roads with locations inconsistent with current resource goals. As part of this project, the portions of these roads that impact natural processes will be relocated or otherwise mitigated.

Big Prairie

Forest Road (FR) 05 runs through a significant portion of the interior of Big Prairie. The original road construction took soils from the immediate area to establish a crown for the current roadway. This resulted in a road elevated as much as 7 feet above the prairie. This arrangement impacts the flow of water from one side of the prairie to the other, and also acts as a significant barrier to the movement of animals, particularly smaller amphibians (such as striped newts), between the two sides of the prairie. Moving the road off the prairie and to the east will rectify these problems by restoring contour and allowing unimpeded water flow. If moving FR 05 is not feasible, installing culverts in the current road will help restore water flow and allow for animal movement at specific junctures.

Figure 1. Big Prairie. Forest Road 5 runs north-south through prairie.

Long Pond

Forest Road 14-2.8 currently runs closely along the break between the upland vegetation and basin of Long Pond. Past high water marks came up to this perimeter. The close proximity of the Forest Road to the pond and its bed, whether wet or dry, has: (1) contributed to resource damage from vehicles driving in the pond bed; and (2) removed important cover for reptile and amphibian species that move between wetland and upland habitats. The proposed road changes will alleviate these problems primarily by eliminating roadways on the west side of Long Pond. On the east side of Long Pond, moving the road away from the pond bed edge and further into the sand pine scrub will help these problems by keeping vehicular traffic away from the pond bed (spatially and visually) and by moving the road away from wetter mesic habitat. Former road beds will be re-vegetated where needed, restoring cover for reptile and amphibian species.

Figure 2. Detail of Long Pond area, showing resource damage from unauthorized vehicle use.

Actions

- Decommission 0.7 miles of FS Road 05 that intersect Big Prairie. Remove all surfacing and road material from the prairie, re-vegetate as needed, remove culverts and other drainage structures, and block access as needed.
- Construct 1.4 miles of new Level 3 road around Big Prairie to replace the decommissioned section as described above. Work includes clearing and grubbing, surfacing, and constructing drainage as needed.
- Decommission 2.1 miles of FS Road 14-2.8 located within the vicinity of Long Pond. Block access and re-vegetate as needed.
- Construct 2.0 miles of new Level 2 road around Long Pond area to replace section of FS Road 14-2.8 as described above. Work includes clearing and grubbing and some grading.

3.3 Design Criteria

Design criteria are included to minimize or eliminate potential negative effects of proposed actions. General measures are listed below as well as specific applicable criteria cited from the Forestwide Standards & Guidelines section of the LRMP. Project-specific criteria are generated for this project or suggest a stricter application of an existing Standard or Guideline.

General Measures

Incorporate Best Management Practices (State of Florida guidelines) to prevent any adverse effects to water or wetlands.

Maximizing the potential for beneficial effects and minimizing the potential for adverse effects on Threatened, Endangered and Sensitive (TES) plant and animal species.

Minimizing the potential for introduction and spread of non-native invasive species (NNIS) such as cogon grass, Japanese climbing fern, and Japanese mimosa as a result of timber sales or other mechanical activities.

Locating and protecting heritage resource sites utilizing the zone archeologist.

Emphasizing prescribed burning to enhance habitat for TES species.

Promoting the scenic and environmental goals of the Florida National Scenic Trail (FNST) by using trail protection measures as outlined in the FNST Certification Agreement.

Promoting public safety and protecting resources adjacent to motorized trails.

Using normal road obliteration procedures that are part of timber sale administration to ensure that new unauthorized motorized trails are not created.

Ensuring that short-term uses would sustain or increase long-term ecosystem productivity.

Ensuring there is no irreversible commitment of resources.

Timber Production Measures
Use the following restocking level as guides in conjunction with professional judgment to determine acceptable restocking based on the likelihood that additional efforts will greatly increase stocking, site capability for timber production, and ecosystem health objectives. Sand pine: 200 (lower level) – 1,500 (upper level). (LRMP 3-20 VG-21)

Use clearcut as the preferred method of final harvest in sand pine. Use all other silvicultural practices to meet site-specific needs. (LRMP 3-20 VG-25)

During sand pine harvesting, leave as many standing snags as possible. If an average of one snag per acre is not present, leave live trees to bring the total to one per acre. Where possible, to enhance visual quality, leave clumps of up to 4 trees. (LRMP 3-20 VG-26)

Decide, on a case-by-case basis, to protect oak scrub stands or convert them to sand pine stands. Scrub-jay habitat suitability is one of the considerations in the decision. (LRMP 3-20 VG-27)

Watershed and Air
Clearcut harvesting will not occur within 35 feet of lakes and ponds 2 acres or larger, seasonal lakes and ponds, and all sinkholes that open to the Florida aquifer, as set forth in the Revised 2000 Silviculture Best Management Practices Manual. (LRMP 3-24 WA-2 and WA-3)

During prescribed burning operations, suppressant foam will not be applied within wetland ecotones when wetlands are holding water, and foaming agent containers will not be rinsed in wetlands. (Prescribed Burning BE)

Wildlife Protection Measures
Protect bald eagle breeding areas by meeting the guidelines established in the most recent version of the National Bald Eagle Management Guidelines. (Forest Plan Amendment #8)

Indigo snakes and gopher tortoises will be avoided or otherwise protected from harm when encountered by personnel, cooperators, or contractors engaged in activities that endanger individual specimens. (LRMP 3-29 WL-10)

Timber contractors undergo an educational program that includes information on the physical characteristics of indigo snakes, life history, and types of habitats where the snake is found. Contractors are also instructed to comply with Standards and Guidelines WL-10-12. This measure is as put forth in the Biological Opinion for the Revised LRMP.

Field personnel and contractors will be educated in gopher tortoise burrow identification. In potential gopher tortoise habitat, establishing log landings, designating skid trails, and parking equipment within 25 feet of known gopher tortoise burrows is prohibited. Equipment operators will be instructed to maintain a 25-foot distance during operations when previously unknown burrows are encountered. (LRMP 3-29 WL-11; amended in Forest Plan Amendment #8)

Project-Specific Criteria
If Florida Scrub-Jays are present in stands considered to be regeneration failures, then scheduled site preparation activities (e.g., roller-chopping, burning, seeding) will not occur.

No roller-chopping activities will occur from May to August to prevent destruction of the eggs or young of ground-nesting birds and herpetofauna.

If actively occupied striped newt ponds are discovered within or adjacent to the project area, the potential habitat of any terrestrial striped newts would be protected from roller-chopping with a 700-foot radius buffer from the occupied wetland margin.

4.0 FEDERALLY ENDANGERED AND THREATENED WILDLIFE SPECIES

4.1 Species Not Considered
Potential effects on four endangered species and the Bald Eagle are not considered because treatment area is outside the established range of the species or does not contain habitat associated with the species. **The proposed actions will have no effect on these species.** A list of species not considered and short explanations are in Section 7 below.

Effects of the Proposed Action
4.2 Florida Scrub-Jay (*Aphelocoma coerulescens*)
Direct effects
Crookedwood and sand pine harvest operations would only occur in stands older than 30 years and thus would not directly impact any Florida Scrub-Jays. Chopping, prescribed burning and reforestation activities would occur post-harvest but prior to the age habitat is suitable for scrub-jays. Scrub-Jays may use these areas for feeding, but such treatments would not create any significant direct effects other than minor temporary disturbance for Scrub-Jays in nearby territories. Site preparation activities in stands considered stocking failures will not affect Scrub-Jays because although there is not enough sand pine to allow for a feasible harvest, there is too much canopy coverage and shrub layer growth in these areas to attract Scrub-Jays.

Wetland restoration/road relocation activities in the Long Pond/Big Prairie area *may affect – unlikely to adversely affect* the Florida Scrub-Jay. Activities may introduce minor, temporary disturbance to jays with territories on habitat edge near where the new roads will be located.

Indirect effects
Harvest operations indirectly benefit scrub-jays by creating early successional sand pine scrub habitat. Harvested areas could be used by scrub-jays immediately after timber removal as feeding grounds. Sand pine scrub habitat becomes suitable for pairs establishing territories after about three years post-harvest. Chopping and prescribed burning would provide indirect beneficial effects by reducing coarse woody debris and stimulating vegetative growth, which can trigger increases of prey species such as arthropods and small vertebrates.

Reforestation activities could potentially decrease the time habitat remains suitable for Scrub-Jays by promoting sand pine density. However, even naturally regenerated stands can have high pine densities due to factors that influence sand pine seed germination like weather and topography. The transitory nature of early successional scrub and the variety of species that inhabit the scrub dictates that this ecosystem be managed by maintaining a desired level of scrub habitat in certain age classes. This is achieved by harvesting mature stands as others become unsuitable. Reforestation allows managers to reach these desired levels by ensuring sand pine timber stands reach a merchantable age with appropriate stocking levels, thereby allowing harvest treatments and the early-successional habitat they creation to remain feasible.

Cumulative effects
The proposed actions, when considered along with past, present, and reasonably foreseeable actions, will benefit the Florida Scrub-Jay by allowing land managers to treat needed acreages of habitat that cannot be maintained solely with fire or other means. Stands harvested in this project are part of the long-term Forest-wide process of managing the scrub landscape. No concurrent or future projects are anticipated to create additional effects or amplify effects already identified.

The proposed action is **not likely to adversely affect (NLAA)** the Florida Scrub-Jay because there is insignificant risk of direct effects and the indirect effects benefit the species through the regeneration of early successional sand pine scrub habitat. This determination differs from the "may [adversely] effect" determination reached in the LRMP Biological Assessment due to the fact that no prescribed burning of suitable habitat would occur in the current project and thus no nests or juveniles would be at risk of mortality.

4.3 Wood Stork (*Mycteria americana*)

Direct effects
All harvest-related and site prep activities would have no effect on the Wood Stock because stork habitat would not be affected. Road obliteration and relocation of Forest Road 05 would not harm Wood Storks: no colonies exist within Ocala National Forest (US Fish and Wildlife Service, 2010); Big Prairie/Long Pond does not fall within Core Foraging Habitat of colonies (US Fish and Wildlife Service, 2010); and the current location does not impact the drier marsh zones that could serve as Suitable Foraging Habitat (SFH) (US Army Corps of Engineers and US Fish and Wildlife Service, 2008; US Fish and Wildlife Service, 1997). Instead, the action of wetland improvement might benefit wood storks through restorative hydrological flow and thereby improve the SFH.

Indirect effects
Noise and construction activities would be too far from potential Wood Stork SFH to interfere with their behavior or the quality of SFH. The proposed closing and restoration activity in Big Prairie/ Long Pond area might temporarily disturb individuals by causing them to vacate the area. Harvesting,

clearing, and road construction to create an alternate route around the wetland areas would be too far away to cause disturbance in any individuals; it is unsuitable to serve as foraging habitat for wood storks.

The proposed action would relocate Forest Road 05 and decommission other roads that surround sensitive wetland areas and prevent motor vehicle use. There are sites throughout Big Prairie and Long Pond that have shallow marshes with open pools but the flow is disrupted by several roads. Relocating roads with a minimum 100-foot buffer from the prairies would focus the associated motor noise and human activities furthest from the areas that provide the highest quality wood stork and other waterbird habitat. The decommissioned roads would restore the natural wetland ecosystem and allow water to naturally flow between depressions.

Cumulative effects
The proposed actions, when considered along with past, present, and reasonably foreseeable actions, would cumulatively benefit the Wood Stork by restoring natural processes to wetlands in the project area. No concurrent or future projects are anticipated to create additional effects or amplify effects already identified.

The proposed action would have **no effect** on the Wood Stork because there are no risks of direct, indirect, or cumulative effects on the species or its habitat. The species would see indirect benefit from the wetland restoration portions of the project.

4.4 Eastern Indigo Snake (*Drymarchon corais*)

Effects of the Proposed Action

Direct effects
There would exist some potential for individuals to be harmed or killed by heavy machinery or ground penetration from sand pine harvest, roller-chopping, prescribed burning operations, and road obliteration. However, individuals are capable of temporarily leaving stands or seeking refuge in a gopher tortoise burrow during disturbances. Seeding would not create any direct effects since the activity creates little disturbance and Eastern Indigo Snakes can easily escape a farm tractor. If design criteria (marking and avoiding burrows, moving individuals from harm's way) are followed, these activities would be unlikely to cause direct mortality. Although Eastern Indigo Snake eggs not laid in gopher tortoise burrows may be exposed to direct impacts via chopping, design criteria (no chopping May – August; removal of individuals in harm's way by operators) decrease the chances of direct impact. Snakes may temporarily leave a stand during treatment, but the large activity range of the species (125-250 ac; Moler 1992) and its ability to use different habitats (USFWS 1999a) mitigate the negative effects of temporary disturbance. Road obliteration and rehabilitation activities would only introduce minor temporary disturbance, if any, to individuals present.

Wetland restoration/road relocation activities in the Long Pond/Big Prairie would have *no effect* on the Eastern Indigo Snake. Any disturbance during road relocation would minor and temporary.

Indirect effects
Freshly harvested stands and rehabilitated prairies would indirectly benefit the indigo snake by creating a variety of microhabitats that would attract prey species and assist in body temperature regulation. Chopping and prescribed burning stimulate ground cover abundance and diversity and increase habitat quality for gopher tortoises. Increased tortoise abundance would indirectly benefit the Eastern Indigo Snake by providing refugia and egg-laying sites. Reforestation does not introduce any indirect effects to the eastern indigo snake since the species uses a variety of habitats. Indigo snakes frequent wetland areas (Dodd and Barichivich 2007) and would benefit from road obliteration as it would connect the

forest-wetland ecotone and reduce mortality from human-caused disturbance. Home ranges would likely shift as project stands mature and nearby stands are harvested or otherwise set back to early successional states.

Cumulative effects
The proposed actions, when considered along with past, present, and reasonably foreseeable actions, would cumulatively benefit the eastern indigo snake by creating habitat suitable in sand pine scrub for gopher tortoises which create burrows important for indigo snakes. Continued scrub management would perpetuate the landscape-scale diversity that is important to species with large activity ranges such as the indigo snake. In addition, cumulative benefit from the prairies will include less traffic disturbances, high quality edge for foraging and connectivity between prairies. No concurrent or future projects are anticipated to create additional effects or amplify effects already identified.

Purposed action would **likely to adversely affect (LAA)** the eastern indigo snake. There exists some potential for individuals to be directly impacted by heavy machinery during harvest, site preparation, and road obliteration activities. This potential is minimized by the inclusion of design criteria and the ability of individuals to escape harm by leaving the stand or seeking refuge in protected gopher tortoise burrows. The management actions would improve habitat diversity and promote gopher tortoise use, increasing available refugia for indigo snakes. This effect determination parallels the "may [adversely] effect" determination in the LRMP. All activities in the currently purposed action are analyzed in the LRMP and are covered under the Biological Opinion for the LRMP.

4.5 Sand Skink (*Neoseps reynoldsi*)

Effects of the Proposed Action

Direct effects
Harvest and roller-chopping operations introduce a very small risk of direct impact via mortality to sand skinks from ground-disturbing machinery. Harvest operations hold a small probability of impact because merchantable sand pine stands are unlikely to be occupied by sand skinks. Chopping operations pose some mortality risk from chopper blades due to the fact that sand skinks are fossorial and spend most of their time 1-8" under the soil (Christman 1992). Since chopping would occur within 18 months of harvest, chopped stands would have a relatively low probability of occupancy due to low shrub occurrence.

Seeding would not create any direct effects since the activity creates little disturbance and the attachments on the seeding tractor only disturb the top inch of soil – not deep enough to directly affect the sand skink. While reforestation may indirectly impact the sand skink in much the same way as it does the Florida Scrub-Jay (by shortening the length of time the habitat is suitable), the overall impact is beneficial because the practice allows land managers to treat needed acreages of habitat that cannot be maintained with fire or other means.

Road obliteration and road reconstruction would not create any direct effects since obliteration would not impact individuals or eggs, and road reconstruction would not introduce any new traffic patterns that could serve as barriers for movement. Road obliteration would indirectly benefit the sand skink by creating a small net increase in available habitat. Road reconstruction would not introduce any indirect effects since the road area would not change in character with regard to sand skink behavior or ecology.

Wetland restoration/road relocation activities in the Long Pond/Big Prairie area *may affect –not likely to adversely affect* sand skinks. This part of the proposed action may temporarily disturb individuals occurring in the area where roads would be relocated into the scrub. Since the new road location would be between upland habitat and scrub habitat, the new routes would not be expected to impact sand skinks, a species associated with scrub habitats, in terms of mortality or restriction of movement.

Indirect effects
Harvest operations would indirectly benefit sand skinks by creating early successional habitat dominated by bare, sandy open ground. Chopping would indirectly benefit sand skinks by stimulating scrub oak regrowth and reducing coarse woody debris, thus increasing the number of feeding sites and prey. Prescribed burning and the overall management regime would indirectly benefit sand skinks by promoting increased bare ground coverage and providing scattered shrub cover, conditions that are potential key habitat factors for the sand skink (McCoy et al. 1999).

Cumulative effects
Harvest and reforestation activities would provide a cumulative benefit by allowing land managers to treat needed acreages of habitat that cannot be maintained with fire or other means. Stands harvested in this project and other similar projects are part of the Forest-wide process of managing the scrub landscape. Current projects are planned to coincide with and compliment current and future projects to provide diversity and consistent early-successional habitat over the Forest landscape. No concurrent or future projects are anticipated to create additional effects or amplify effects already identified.

The proposed action would **likely to adversely affect (LAA)** the sand skink because there is a small risk of mortality, but habitat quality would improve after treatment. Over time, the habitat would again become unsuitable, but forest-wide objectives for maintaining early successional sand pine scrub on the landscape would ensure no net loss of suitable sand skink habitat. This effect determination parallels the "may [adversely] effect" determination in the LRMP. All activities in the currently proposed action are analyzed in the LRMP and are covered under the Biological Opinion for the LRMP.

4.6 Florida Bonamia (*Bonamia grandiflora*)

Effects of the Proposed Action

Direct effects
Florida Bonamia is associated with openings or disturbed areas. Therefore it is highly unlikely to occur in the mature sand pine stands that are proposed to be harvested and no significant direct effects are anticipated. A few plants may be extirpated in small areas that receive extensive ground disturbance such as log landings. These effects would be extremely localized and would not create a significant impact on the local population of Florida Bonamia. Florida Bonamia is known to have substantial seed banks in the soil (Harnett and Richardson 1989) and quickly become reestablished in sand pine harvest areas on the Ocala National Forest. It is frequently seen in flower within a year of the harvest date (Jay Garcia, personal communication). Roller-chopping and seeding operations may disturb the horizontal stems of Florida Bonamia individuals, but the root systems would remain intact and individuals could resprout. Prescribed burning activities would only impact surficial stems and would not be a concern regarding individual mortality.

Wetland restoration/road relocation activities in the Long Pond/Big Prairie *may affect –not likely to adversely affect* Florida Bonamia. Road rerouting could disturb individual Bonamia plants occurring in areas where new roads would be located. Individuals in this area could be extirpated but the impacted area is limited and would not create a significant impact on the local population of Florida Bonamia.

Indirect effects
The removal of a sand pine overstory would indirectly benefit Florida Bonamia by increasing sunlight penetration to the ground and creating an open environment with large patches of bare ground. Roller-chopping would promote bare ground openings by decreasing coarse woody debris. Prescribed burning would create openings and stimulate flowering and germination. Habitat disturbance (fire or mechanical) has been shown to result in higher individual Bonamia densities, stem densities, seedling recruitment, flowering, and seed production versus undisturbed areas (Harnett and Richardson 1989). Reseeding would indirectly impact plant growth and occurrence over the long term, once canopy closure occurs. At that point, the plants would persist in the seed bank until the next harvest or other disturbance occurs.

Cumulative effects
Harvest and reforestation activities would provide a cumulative benefit by allowing land managers to treat needed acreages of habitat that cannot be maintained with fire or other means. Stands harvested in this project and other similar projects are part of the Forest-wide process of managing the oak scrub landscape. Current projects are planned to coincide with and compliment future projects to provide diversity and consistent early-successional habitat over the Forest landscape. No concurrent or future projects are anticipated to create additional effects or amplify effects already identified.

The proposed action would **likely adversely affect (LAA)** Florida Bonamia because there exists some potential for individuals to be killed by ground-penetrating equipment use. However, this species is adapted to disturbance and can persist via its persistent root system and extensive seed banks in the soil. This effect determination parallels the "may [adversely] effect" determination in the 1999 LRMP.

4.7 Lewton's Polygala (*Polygala lewtonii*)

Effects of the Proposed Action

Direct effects
In the scrub, Lewton's Polygala (LP) occurrence is primarily associated with open early-successional habitats as well as old firebreaks or sand roads that provide direct sunlight. It is highly unlikely that any individuals would be occurring in stand interiors in an aboveground vegetative state. Therefore no significant direct effects are anticipated in mature sand pine stands proposed to be harvested. There exists a remote possibility of direct disturbance to any individuals in old fire breaks serving as stand boundaries.

Aboveground vegetation of individuals may be consumed during prescribed fire activities, but the root systems persist and individuals would be unlikely to experience mortality as a direct result of burning. Investigations have showed significant positive germination by LP in response to smoke exposure (Lindon and Menges 2008), therefore the species' relationship to direct fire exposure is likely not a negative one.

There is little available research on the direct impacts of roller-chopping on LP in open stand conditions (i.e., post-harvest). Due to the fact that LP does not have a trailing vine-like habit or significantly deep root system, it is conceivable that individuals could be killed by roller-chopping for site preparation. The 1999 LRMP states that individuals "could be killed by ground-penetrating mechanical site preparation" but that the number of individuals "would be insignificant as these would be chance encounters". The distribution of LP within scrub stands such as those in this proposed action are often scattered and isolated – thus the chances of multiple individuals being directly affected by any chopping operations is very small.

Wetland restoration/road relocation activities in the Long Pond/Big Prairie area will have *no effect* on Lewton's Polygala. There are no known occurrences of Lewton's Polygala within the area to be impacted by new road placement in the oak scrub.

Indirect effects
Harvest activities would result in an open environment with bare patches of ground present. Plants such as LP would benefit from increased sunlight penetration and decreased competition for sunlight. Roller-chopping would further heighten these beneficial conditions. Stands seeded with sand pine that resulted in high stocking levels might experience a shorter period of time in which conditions are suitable for vegetative growth and flowering than naturally regenerated stands with lower stocking rates.

Fire is a key component of this species' natural history – it stimulates regeneration from seed, improves recruitment, and reduces competition (USFWS 2009). Prescribed burning for site preparation could potentially stimulate regeneration in the seed bank and provide other benefits should seed germination occur. Fire occurring during February – April could potentially consume (not kill) the aboveground biomass of LP individuals, but the population would benefit from increased germination and recruitment.

Cumulative effects
Harvest and reforestation activities would provide a cumulative benefit by allowing land managers to treat needed acres of habitat that cannot be maintained solely by fire. Stands harvested in this project and other similar projects are part of the Forest-wide process of managing the scrub landscape. Part of managing the landscape involves maintaining adequate levels of early successional scrub for species endemic to this rare habitat. Current projects are planned to coincide with and compliment current and future projects to provide diversity and consistent early-successional habitat over the Forest landscape. No concurrent or future projects are anticipated to create additional effects or amplify effects already identified.

The proposed action would **likely adversely affect (LAA)** Lewton's Polygala because there exists some potential for individuals to be killed by ground-penetrating equipment use. This species has scattered, isolated occurrence patterns in the action area and any effects are highly unlikely to be significant. This effect determination parallels the "may [adversely] effect" determination in the LRMP.

4.8 Scrub Buckwheat (*Eriogonum longifolium* var. *gnaphalifolium*)

Effects of the Proposed Action

Direct effects
Scrub Buckwheat is also highly unlikely to be impacted by harvest operations due to the low probability of its occurrence in mature sand pine habitat, which lacks suitable habitat conditions for the species. Roller-chopping may impact aboveground vegetation, but Scrub Buckwheat has a woody taproot which would likely persist through such disturbance. Scrub Buckwheat is known to tolerate and benefit from low-intensity fire application. Although a few Scrub Buckwheat individuals have been observed to have killed by "hot" prescribed burns in the past, other observations have noted the persistence of individuals after site preparation burns have been conducted (USFWS 1999b).

Wetland restoration/road relocation activities in the Long Pond/Big Prairie area will have *no effect* on Scrub Buckwheat. There are no known occurrences of Scrub Buckwheat within the area to be impacted by new road placement in the oak scrub.

Indirect effects

Harvest activities and subsequent site preparation activities (roller-chopping and prescribed burning) would indirectly benefit scrub buckwheat by removing canopy cover, increasing open space, and decreasing competition. Stands seeded with sand pine that result in high stocking levels might experience a shorter period of time in which conditions are suitable for vegetative growth and flowering than naturally regenerated stands with lower stocking rates.

Cumulative effects
Harvest and reforestation activities would provide a cumulative benefit by allowing land managers to treat needed acres of habitat that cannot be maintained solely by fire. Stands harvested in this project and other similar projects are part of the Forest-wide process of managing the scrub landscape. Part of managing the landscape involves maintaining adequate levels of early successional scrub for species endemic to this rare habitat. Current projects are planned to coincide with and compliment current and future projects to provide diversity and consistent early-successional habitat over the Forest landscape. No concurrent or future projects are anticipated to create additional effects or amplify effects already identified.

The proposed action would **likely adversely affect (LAA)** Scrub Buckwheat because there exists some potential for individuals to be killed by ground-penetrating equipment use or site preparation burns under certain unintended conditions. Mortality occurrence is expected to be insignificant due to the species' woody taproot and persistence after fire. This effect determination parallels the "may [adversely] effect" determination in the LRMP.

5.0 DETERMINATION OF EFFECTS

Based on the preceding analysis of the effects on federally listed threatened and endangered species, I make the following determinations that the proposed actions will have the following effects:

5.1 Proposed Action: Management Action

- **No effect** on the Wood Stork.

- **May affect - likely to adversely affect** the Eastern Indigo Snake, Sand Skink, Florida Bonamia, Lewton's Polygala, and Scrub Buckwheat.

- **May affect - not likely to adversely affect** the Florida Scrub-Jay.

6.0 REFERENCES

Christman, S. P. 1992. Sand Skink (*Neoseps reynoldsi*). Pages 135 – 140 *in* P. E. Moler, ed. Rare and Endangered Biota of Florida, Vol. III, Amphibians and Reptiles. University Press of Florida, Gainesville, FL.

Dodd, Jr., C. K. and Barichivich, W. J. 2007. Movements of large snakes (Drymarchon, Masticophis) in north-central Florida. Florida Scientist 70(1): 83–94.

Harnett, D.C. and D. R. Richardson. 1989. Population biology of *Bonamia grandiflora* (Convolvulaceae): Effects of fire on plant and seed bank dynamics. American Journal of Botany 76: 361-369.

Lindon, H. L., and E. Menges. 2008. Effects of smoke on seed germination of twenty species of fire-prone habitats in Florida. Castanea 73: 106 – 110.

McCoy, E. D., P. E. Sutton, and H. R. Mushinsky. 1999. The role of guesswork in conserving the threatened sand skink. Conservation Biology 13: 190 – 194.

Moler, P. E. 1992. Eastern Indigo Snake (*Drymarchon corais couperi*). Pages 181 – 186 *in* P. E. Moler, ed. Rare and Endangered Biota of Florida, Vol. III, Amphibians and Reptiles. University Press of Florida, Gainesville, FL.

US Army Corps of Engineers and US Fish & Wildlife Service. 2008. Wood Stork Key for Central and North Peninsular Florida. 6 pp. Also available at: http://www.fws.gov/northflorida/WoodStorks/Documents/20080900_JAXESO_WOST_Key.pdf

USDA Forest Service. 1999. Revised Land and Resource Management Plan for National Forests in Florida. National Forests in Florida, Tallahassee, FL. Management Bulletin R8-MB-83A.

USDA Forest Service. 2006. Biological Evaluation of the Effects of Prescribed Burning on Proposed, Endangered, Threatened and Sensitive Wildlife Species. 10 pp.

US Fish and Wildlife Service. 1999a. Eastern Indigo Snake (*Drymarchon corais couperi*). Pages 4-567 – 4-581 *in* South Florida Multi-species Recovery Plan. U. S. Fish and Wildlife Service, Southeast Region, South Florida Ecological Services Field Office, Vero Beach, Florida. Also available at: http://www.fws.gov/verobeach/MSRPPDFs/EasternIndigoSnake.pdf.

US Fish and Wildlife Service. 1999b. Scrub Buckwheat (*Eriogonum longifolium* var. *gnaphalifolium*). Pages 4-1001 – 4-1011 *in* South Florida Multi-species Recovery Plan. U. S. Fish and Wildlife Service, Southeast Region, South Florida Ecological Services Field Office, Vero Beach, Florida. Also available at: http://www.fws.gov/verobeach/MSRPPDFs/ScrubBuck.PDF.

US Fish and Wildlife Service. 2007. National Bald Eagle Management Guidelines. 23 pp.

US Fish and Wildlife Service. 2009. Lewton's Polygala (*Polygala lewtonii*) - 5-Year Review: Summary and Evaluation. U. S. Fish and Wildlife Service, Southeast Region, South Florida Ecological Services Field Office, Vero Beach, Florida. Also available at: http://www.fws.gov/verobeach/MSRPPDFs/Lewton.PDF.

7.0 FEDERALLY LISTED SPECIES NOT PRESENT

7.1 Florida Manatee (*Trichechus manatus*)

The Florida Manatee is an aquatic mammal that occurs in rivers, canals, estuaries, lagoons, and bays throughout central and southern Florida. No proposed activities occur in or near any of the listed bodies of water.

7.2 Red-cockaded Woodpecker (*Picoides borealis*)

No proposed treatment areas occur within any longleaf-wiregrass habitat, thus the project will have no impact on the Red-cockaded Woodpecker.

7.3 Britton's Beargrass (*Nolina brittoniana*)

The Ocala National Forest only holds a small group of Britton's Beargrass individuals in the western section of the Forest Boundary. This occurrence of Britton's Beargrass is more than 10 miles from any forest stands proposed for treatment. Therefore it is reasonable to assume that no effects will occur from the purposed action.

7.4 Bald Eagle (*Haliaeetus leucocephalus*)

No treatment areas occur within 660 feet of any active or alternate nest (the closest nest is ~1,400 feet from a proposed treatment stand). The 660 foot buffer is recommended under the National Bald Eagle Management Guidelines under the Timber and Forestry Practices section (Category C; USFWS 2007). Proposed treatment areas would not directly impact habitat used for feeding or roosting purposes.

Appendix B – Biological Evaluation (Sensitive Species)

Biological Evaluation
for the
Central Scrub Project

On the Ocala National Forest

Marion County, Florida
November 12, 2013

Prepared by: _____ Date: _____

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1.0 INTRODUCTION

This Biological Evaluation documents the analysis and rationale for the potential effects of a specific planned Forest Service (FS) activity on sensitive wildlife species. This document serves as a supplement to the Biological Assessment, which addresses federally listed species (note that the Bald Eagle is addressed in the Biological Assessment although it is not federally listed). The Biological Evaluation serves to ensure that FS actions do not contribute to loss of viability or a trend towards Federal listing for any Sensitive species and provide a process and standard by which to ensure that sensitive species receive full consideration in the decision making process.

This Biological Evaluation (BE) considers the potential effects of the Central Scrub Project on sensitive wildlife species. The best available science on sensitive wildlife species was used to document this consideration of potential effects, including recent scientific literature, correspondence with knowledgeable individuals in scientific/land management professions, field surveys, and personal observation. Recent scientific literature used in the document is included in the references section.

Sensitive Wildlife Species
Species addressed in the BE were selected from the Regional Forester's Sensitive Species List (RFSS). Appendix I contains a list of sensitive species that may occur in or near the Ocala National Forest (ONF) but have no detailed effects analysis in the current document because the project area does not contain suitable habitat or is outside the known range of the species.

Table 1. Sensitive Wildlife Species Included in Analysis

Taxa	Scientific Name	Common Name
Mammal	*Podomys floridanus*	Florida Mouse
Mammal	*Sciurus niger shermani*	Sherman's Fox Squirrel
Mammal	*Ursus americanus floridanus*	Florida Black Bear
Mammal	*Neofiber alleni*	Round-tailed Muskrat
Bird	*Grus canadensis pratensis*	Florida Sandhill Crane
Reptile	*Gopherus polyphemus*	Gopher Tortoise
Reptile	*Pituophis melanoleucus mugitus*	Florida Pine Snake
Reptile	*Sceloporous woodi*	Florida Scrub Lizard
Reptile	*Stilostoma extennatum*	Short-tailed Snake
Amphibian	*Notophthalmus perstriatus*	Striped Newt

Sensitive Plant Species

The Ocala National Forest has 64 sensitive plant species on the RFSS. To facilitate analysis, plant species were grouped by habitat association and the effects were analyzed according to the potential impacts of the project on the habitat type. Since this project occurs on scrub and a small portion of wetland habitat, only sensitive plant species in those two habitat types will undergo analysis. Table 2 contains a list of sensitive plant species in the scrub and wetland habitat types. Several species on the RFSS List were removed from analysis because their specific wetland associations would not be impacted by the proposed actions. See Appendix I (Subheading 1.10) for these species and their wetland associations.

Table 2. Sensitive Plant Species Included in Analysis

Habitat Association	Scientific Name	Common Name
Sand Pine Scrub	*Arnoglossum floridanum*	Florida Cacalia
Sand Pine Scrub	*Asclepias curtissii*	Curtiss' Milkweed
Sand Pine Scrub	*Calamintha ashei*	Ashe's Calamint
Sand Pine Scrub	*Lechea cernua*	Nodding Pinweed
Sand Pine Scrub	*Persea humilis*	Silk Bay
Sand Pine Scrub	*Schoenocaulon dubium*	Florida Feathershank
Sand Pine Scrub	*Sideroxylon tenax*	Tough Bully
Sand Pine Scrub	*Sisyrinchium xerophyllum*	Jeweled Blue-eyed Grass
Sand Pine Scrub	*Stylisma abdita*	Showy Dawnflower
Wetlands	*Aristida patula*	Tall threeawn
Wetlands	*Aster chapmanii*	Savannah aster
Wetlands	*Coelorachis tuberculosa*	Bumpy jointtail grass
Wetlands	*Hartwrightia floridana*	Florida hartwrightia
Wetlands	*Lachnocaulon engleri*	Engler's bogbutton
Wetlands	*Micranthemum glomeratum*	Manatee mudflower
Wetlands	*Nemastylis floridana*	Fallflowering pleatleaf
Wetlands	*Pieris phillyreifolia*	Climbing fetterbush
Wetlands	*Pinckneya bracteata*	Fevertree
Wetlands	*Rhynchospora breviseta*	Shortbristle beaksedge
Wetlands	*Rhynchospora pleiantha*	Coastal beaksedge
Wetlands	*Schoenolirion albiflorum*	White sunnybells
Wetlands	*Spiranthes longilabris*	Giant spiral ladies'-tresses
Wetlands	*Zephyranthes simpsonii*	Redmargin zephyrlily

2.0 CONSULTATION HISTORY

In accordance with the Endangered Species Act of 1973, as amended, and pursuant to Section 7 of said act, formal consultation on the Biological Assessment for the Revised Land and Resource Management Plan for National Forests in Florida was requested by the Regional Forester in a letter dated September 18, 1998 (USDA Forest Service 1999). On December 18, 1998, the U.S. Fish and Wildlife Service issued a Biological Opinion on the Revised Land and Resource Management Plan.

The Biological Opinion concurred with the Forest Service's "not likely to affect" determination for 13 federally listed species, and provided terms and conditions for incidental take for five wildlife species that received a "may affect" determination. The Biological Opinion also stated that the "level of anticipated take [was] not likely to result in jeopardy to the species" for the Florida Scrub-Jay, Red-cockaded Woodpecker, Eastern Indigo Snake, Sand Skink, Flatwoods Salamander, and Flatwoods Salamander critical habitat (USDA Forest Service 1999). Issuance of the Biological Opinion concluded all formal consultation on the Revised Land and Resource Management Plan for National Forests in Florida.

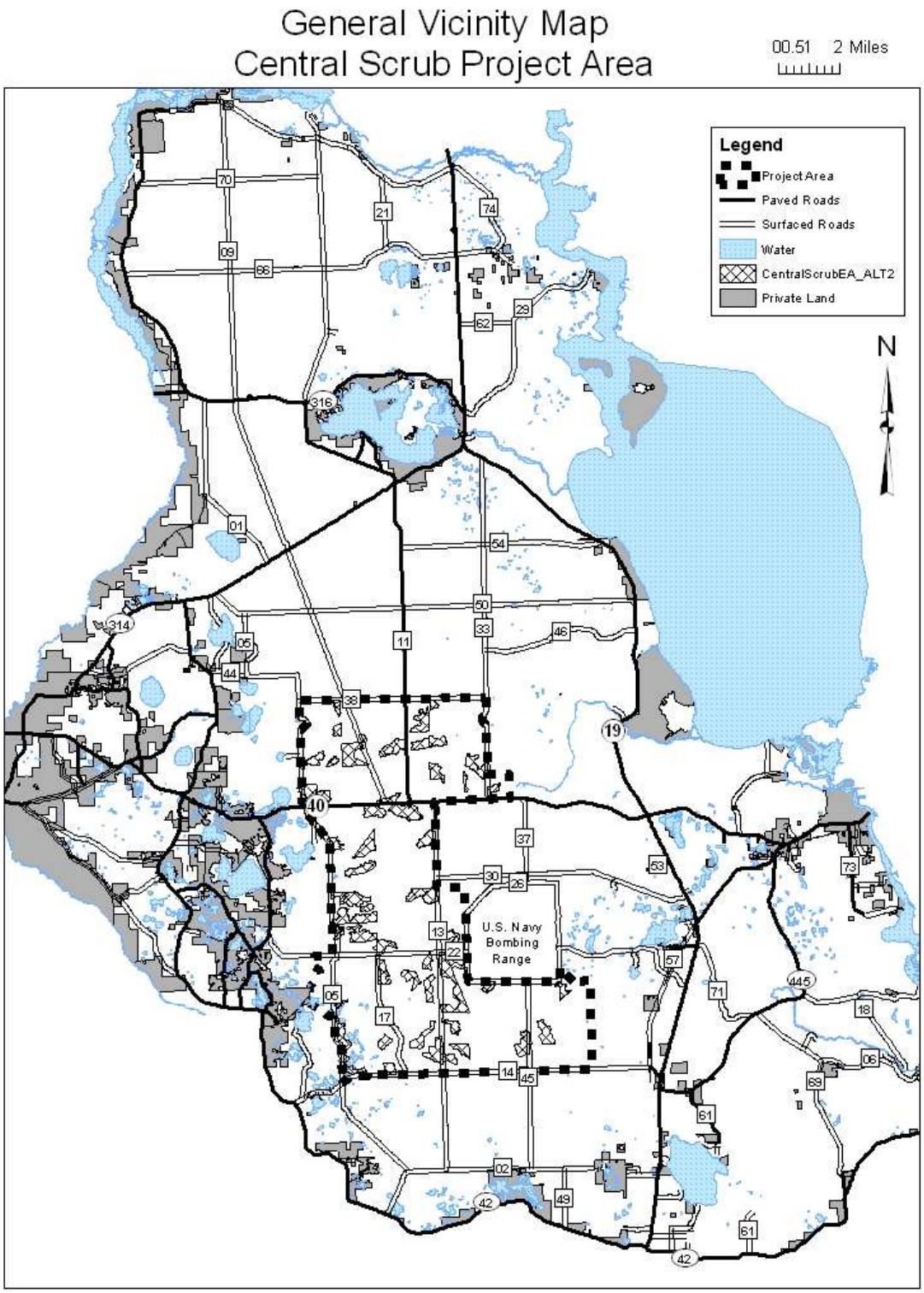
3.0 PROPOSED ACTION AND ALTERNATIVES

The Ocala National Forest is proposing to implement the Central Scrub Project (see Maps 1 – 4). The project would create about 6,400 acres of new scrub openings and includes wildlife, fuels, forest products, timber management, road maintenance and prescribed burning for site preparation in some harvested units. In addition, the project would restore natural processes in the Long Pond/Big Prairie wetland complex by rerouting forest roads outside of the wetland area. Finally, the project would include changing existing road system includes decommissioning activities which may include installation of barriers and/or revegetation. The proposed actions are described below and evaluated with regard to its potential effects on sensitive species.

The majority of this project is located within Management Area 8.1 (Sand Pine, Natural Regeneration, Large Openings) and Management Area 8.2 (Sand Pine, Mixed Regeneration, Moderate Openings). Two compartments (247 and 248) are located within Management Area 8.4 (Scrub Jay Management Area). Note that changes in the desired condition for MA 8.1 and two guidelines (8.1-4 and 8.1-6) and MA 8.2 and two guidelines (8.2-5 and 8.2-7) have been implemented under LRMP Amendment #8. Also refer to the Amendment 8 Replacement Pages for the changes to the Desired Future Conditions (available at http://www.fs.usda.gov/detail/florida/landmanagement/?cid=stelprdb5269794).

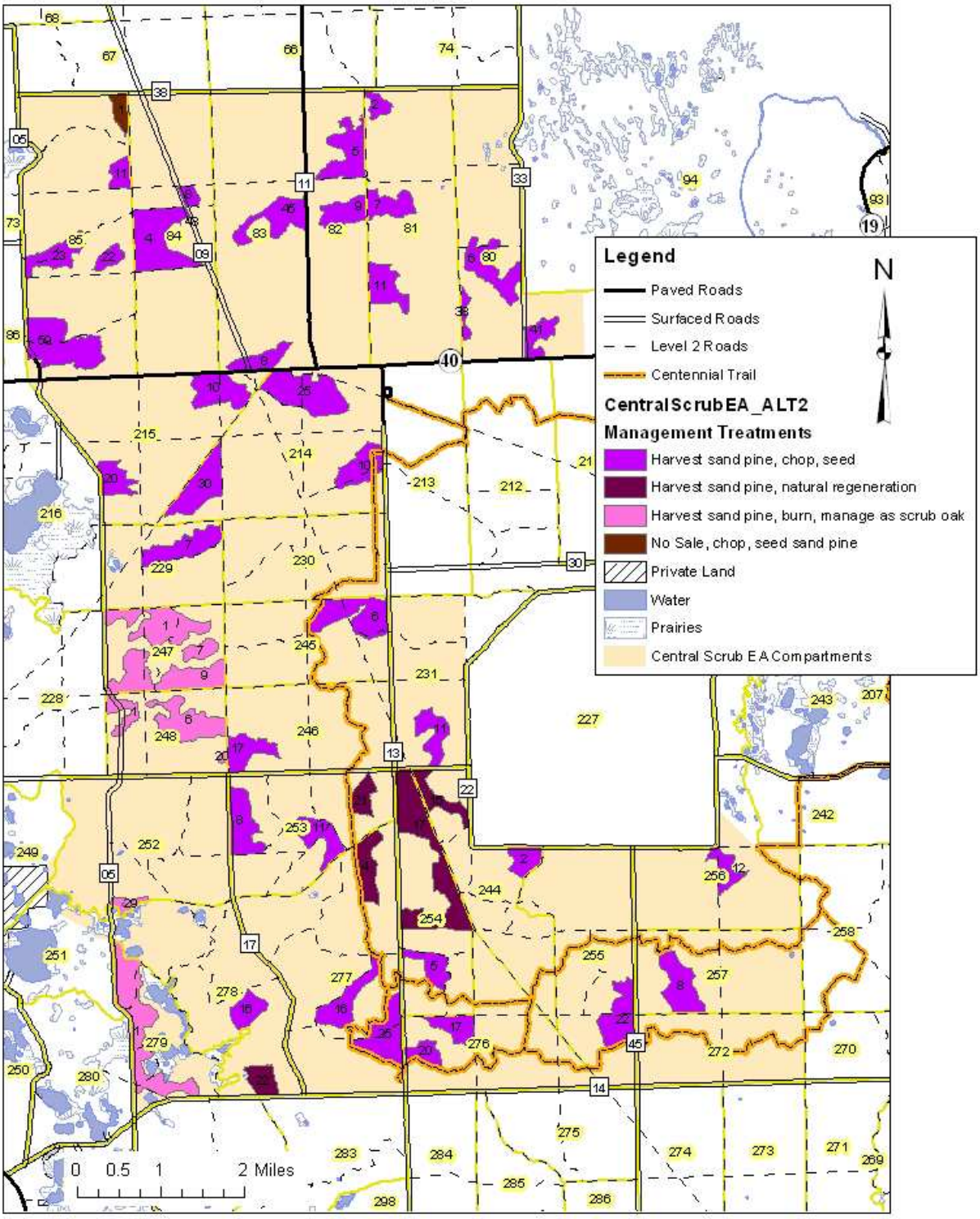
The goals of the Central Scrub Project are to perpetuate the sand pine scrub ecosystem and restore natural processes to fragmented prairies to provide early successional scrub habitat and large, undisturbed prairies for the Florida Scrub-Jay, Sand Skink, Indigo Snake, Gopher Tortoise, Florida Bonamia, Striped Newt, Round-tailed Muskrat, and other species dependent on these habitats.

Map 1


General Vicinity Map
Central Scrub Project Area
0 0.5 1 2 Miles
Legend
Project Area
Paved Roads
Surfaced Roads
Water
CentralScrubEA_ALT2
Private Land
N
U.S. Navy
Bombing
Range

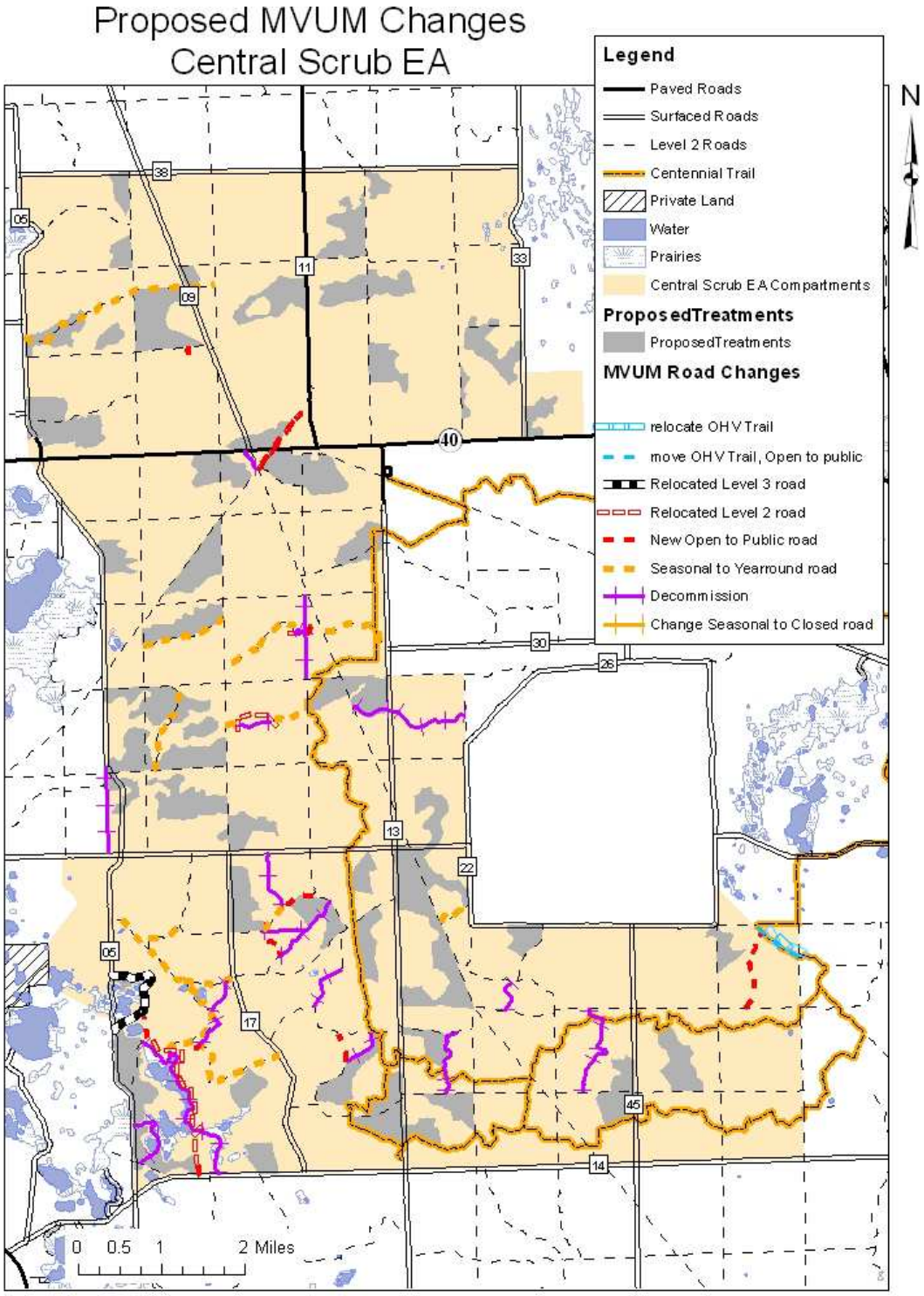
Map 2

Proposed Timber Harvest areas and Treatments
Compartment and Stand Numbers Shown



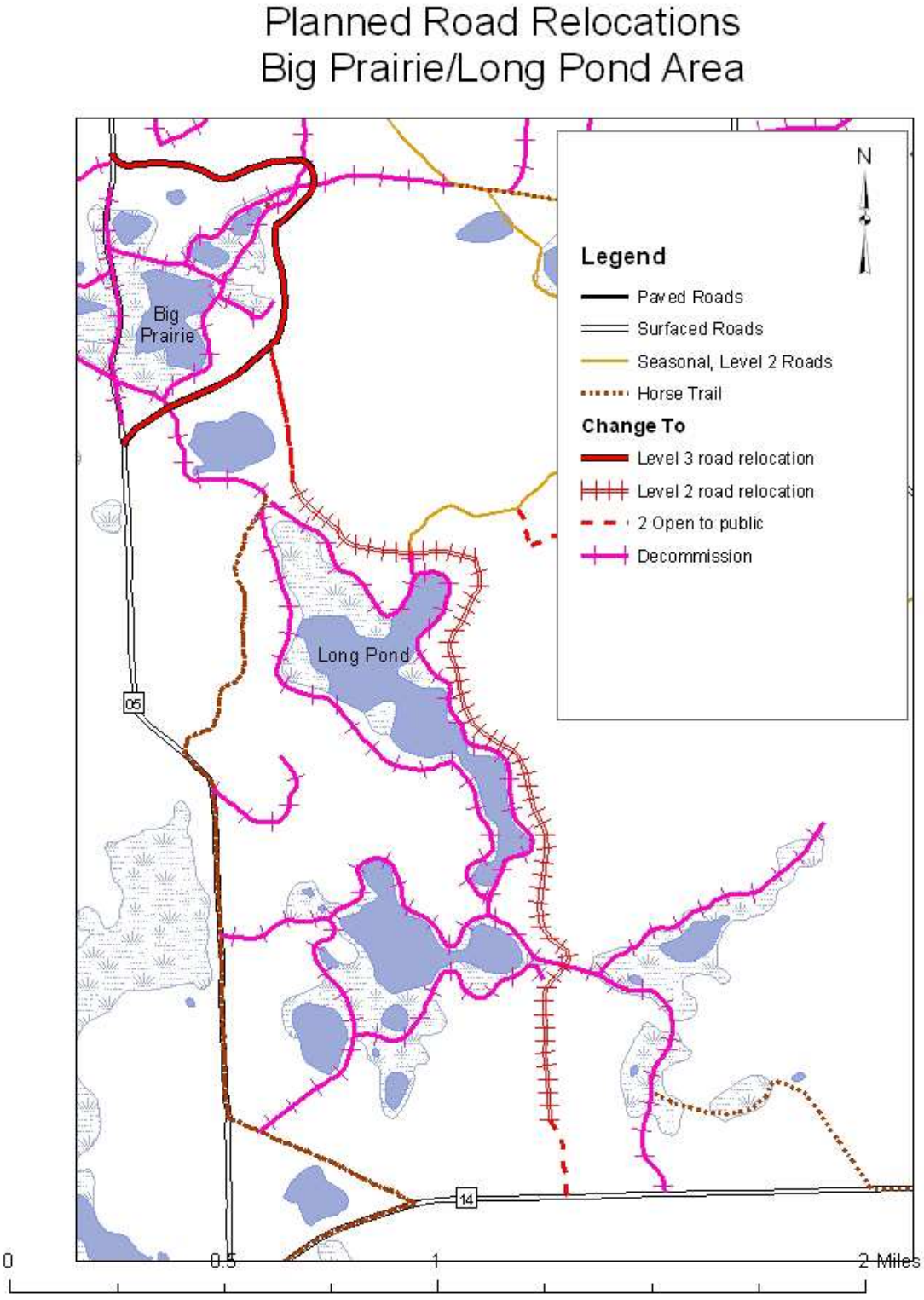
Map 3

Proposed Road System Changes – to Forest Service Roads that are presently Open to the Public



Map 4

Planned Road Relocations Around Big Prairie and Long Pond Area



3.1 Proposed Action

The activities described for the proposed action are proposed for an area located on National Forest lands in Marion County, Florida and involve a total of 6,400 acres in 52 stands within 26 compartments on the Lake George Ranger District and the Seminole Ranger District. (Note that some stands may have more than one proposed action occurring within their boundaries.)

The proposed actions are:

- Harvest crookedwood and merchantable sand pines on approximately 4,457 acres and follow with prescribed burning and/ or roller-chopping, and seed with sand pine.
- Harvest crookedwood and merchantable sand pines on approximately 751 acres and allow to naturally regenerate.
- Harvest sand pine on approximately 1,123 acres, followed with prescribed burning and change management to scrub oak.
- Roller-chop, prescribe burn and seed 54 acres with sand pine.
- Perform road work on 14.9 miles of road to support harvest operations, mostly resurfacing with some reshaping of existing road surfaces.
- Perform road re-designation to decommission about 80 miles of road from the minimum road system; add about 11 miles of existing unauthorized roads to the minimum road system; change about 14 miles of Seasonal roads to Open Year round; change about 0.7 miles of OHV Trail to Level 2, open to the public. OHV Trail would be relocated to nearby, existing closed road; change designations on about 5 miles of system roads to improve overall access to the public.
- Restore natural processes within the Long Pond/Big Prairie area by relocating Forest Road 05 to bypass Big Prairie by relocating about 0.7 miles of Level 3 road, and relocating about 2.1 miles of Forest Road 14-2.8 from around the Long Pond prairie system. The relocation would require new road construction on about 3.3 miles.

Proposed Actions in Detail

Harvest of crookedwood and sand pine. Stands of merchantable sand pine would be sold in fiscal year 2015 and/or 2016, and harvest activities must occur within three years of sale. Crooked wood (*Lyonia ferruginea*) harvests may be conducted in project stands prior to harvest via permit. During crookedwood harvest activities, the trunks of the crookedwood plant are cut at the base. The rhizomatous stems grow back after cutting.

Roller-chopping. This site preparation method uses large drums with 0.75 to 1.0 inch long blades that are spaced 12 to 18 inches apart. Chopper blades sink 8 to 10 inches into the soil and typically disturb 90% of vegetation less than 6 inches in diameter. Chopping breaks down post-harvest logging debris, prepares the seed bed, and moderates oak resprouting. A roller-chopping layout that leaves intermittent areas of undisturbed vegetation (i.e., the "sloppy chop") is encouraged to promote small-scale habitat variability. Roller-chopping treatments would be performed within 18 months of harvest.

Note that approximately 54 acres of sand pine scrub are proposed to be chopped and seeded, with no preceding harvest operations. These areas do not contain enough sand pine for a commercial harvest.

Prescribed burning. Post-harvest prescribed burns are conducted to benefit various TES species by providing effects such as decreasing coarse woody debris and improving germination and resprouting of fire-adapted plant species. The effects of prescribed burning on TES species are also addressed in the Biological Evaluation of the Effects of Prescribed Burning on Proposed, Endangered, Threatened and Sensitive Wildlife Species (USDA 2006). Prescribed burning provides open areas for scrub-jays and mimics some of the natural effects on plant dynamics that historically came from wildfires.

Reforest sand pine scrub. Regeneration activities (seeding) would be carried out within 12 to 15 months of harvest and would occur after roller-chopping or prescribed burning activities. Seeding uses a farm tractor with attachments that drop sand pine seeds in an arrangement providing 6' x 8' spacing throughout the stand. Cables on the front and back of the tractor prepare the soil and cover up the seed after it is dropped. In stands that appear to have sufficient natural regeneration, no seeding will occur, or every other row will be seeded.

Change management type to scrub oak. Five stands containing 764 total acres will move from management type "sand pine" to "scrub oak". These stands will undergo harvest operations but will not be seeded back to sand pine. They will be managed as scrub oak stands and will be burned periodically.

Perform road work. Roads necessary to support harvest operations will be resurfaced or reshaped to support logging trucks. Clay or rock may be added to some areas and ditches may be re-pulled.

Add, decommission, and reclassify Forest Service system roads. As part of the proposed action, some changes will be made to the Forest Service system roads within the project area. For reference, Level 1 roads are closed between intermittent uses and maintained only to prevent resource damage. These roads are not shown on motor vehicle use maps. Level 2 roads are open for high-clearance vehicles where traffic usually consists of one or a combination of administrative, permitted, dispersed recreation, or other specialized uses. Decommissioning roads means to "restore roads to a more natural state," which can include activities ranging from simply blocking the entrance to the road or scattering slash on the roadbed to completely eliminating the roadbed by restoring natural contours and slopes. For detailed definitions of Level 1 & 2 roads, refer to the Forest Service Handbook, Section 7709.59, Chapter 60.

Road Additions. 11 miles of unauthorized roads are proposed to be upgraded to Level 1 and Level 2 Roads classification and added to the MVUM system. Fifty percent would be added to the MVUM system as Level 1 Roads (closed) and 50% would be added as Level 2 Roads (Open to Public). These proposed roads currently exist as unauthorized travelways that were previously left off the roads system, but have subsequently been determined to be beneficial for Forest Service operations and/or public use.

Road Decommissions. 80 miles of roads in the MVUM system are proposed to be decommissioned. This includes 65 miles of Level 1 Roads (closed) and 15 miles of Level 2 Roads (Open to the Public)

Road Relocations. 3 miles of road would be relocated around Long Pond and Big Prairie (see below) to provide a 100 ft buffer between roads and prairies. In addition, 0.7 miles of OHV trail would be rerouted through existing road systems.

Changes to Road Designations. 14 miles of Seasonal Roads would be changed to Open Year Round roads.

Restore natural processes in two wetland areas

During the process of reviewing the status of the forest road system within the project area, the roads in the Big Prairie and Long Pond areas were identified as roads with locations inconsistent with current resource goals. As part of this project, the portions of these roads that impact natural processes will be relocated or otherwise mitigated.

Big Prairie

Forest Road (FR) 05 runs through a significant portion of the interior of Big Prairie. The original road construction took soils from the immediate area to establish a crown for the current roadway. This resulted in a road slightly elevated from the prairie with a shallow ditch on either side. This arrangement impacts the flow of water from one side of the prairie to the other, and also impedes the movement of animals, particularly smaller amphibians (such as striped newts) between the two sides of the prairie. Moving the road off the prairie and to the east will rectify these problems by removing the current road. If moving FR 05 is not feasible, installing culverts in the current road will help restore water flow and allow for animal movement at specific junctures.

Long Pond

Forest Road 14-2.8 currently runs closely along the break between the upland vegetation and basin of Long Pond. Past high water marks came up to this perimeter. The close proximity of the Forest Road to the pond and its bed, whether wet or dry, has: (1) contributed to resource damage from vehicles driving in the pond bed; and (2) removed important cover for reptile and amphibian species that move between wetland and upland habitats. The proposed road changes will alleviate these problems primarily by eliminating roadways on the west side of Long Pond. On the east side of Long Pond, moving the road away from the pond bed edge and further into the sand pine scrub will help these problems by keeping vehicular traffic away from the pond bed (spatially and visually) and by moving the road away from wetter mesic habitat. Former road beds will be revegetated where needed, restoring cover for reptile and amphibian species.

Actions

- Decommission 0.7 miles of FS Road 05 that intersect Big Prairie. Remove all surfacing and road material from the prairie, revegetate as needed, remove culverts and other drainage structures, and block access as needed.
- Construct 1.4 miles of new Level 3 road around Big Prairie to replace the decommissioned section as described above. Work includes clearing and grubbing, surfacing, and constructing drainage as needed.
- Decommission 2.1 miles of FS Road 14-2.8 located within the vicinity of Long Pond. Block access and revegetate as needed.
- Construct 2.0 miles of new Level 2 road around Long Pond area to replace section of FS Road 14-2.8 as described above. Work includes clearing and grubbing and some grading.

All proposed actions in the current project are consistent with and do not exceed the scope of activities described within the Revised LRMP and subsequent amendments.

3.3 Design Criteria

Design criteria are included to minimize or eliminate potential negative effects of proposed actions. General measures are listed below as well as specific applicable criteria cited from the Forestwide Standards & Guidelines section of the LRMP. Project-specific criteria are generated for this project or suggest a stricter application of an existing Standard or Guideline.

General Measures
Incorporate Best Management Practices (State of Florida guidelines) to prevent any adverse effects to water or wetlands.

Maximizing the potential for beneficial effects and minimizing the potential for adverse effects on Threatened, Endangered and Sensitive (TES) plant and animal species.

Minimizing the potential for introduction and spread of non-native invasive species (NNIS) such as cogon grass, Japanese climbing fern, and Japanese mimosa as a result of timber sales or other mechanical activities.

Locating and protecting heritage resource sites utilizing the zone archeologist.

Emphasizing prescribed burning to enhance habitat for TES species.
Promoting the scenic and environmental goals of the Florida National Scenic Trail (FNST) by using trail protection measures as outlined in the FNST Certification Agreement.

Promoting public safety and protecting resources adjacent to motorized trails.

Using normal road obliteration procedures that are part of timber sale administration to ensure that new unauthorized motorized trails are not created.

Ensuring that short-term uses would sustain or increase long-term ecosystem productivity.

Ensuring there is no irreversible commitment of resources.

Timber Production Measures
Use the following restocking level as guides in conjunction with professional judgment to determine acceptable restocking based on the likelihood that additional efforts will greatly increase stocking, site capability for timber production, and ecosystem health objectives. Sand pine: 200 (lower level) – 1,500 (upper level). (LRMP 3-20 VG-21)

Use clearcut as the preferred method of final harvest in sand pine. Use all other silvicultural practices to meet site-specific needs. (LRMP 3-20 VG-25)

During sand pine harvesting, leave as many standing snags as possible. If an average of one snag per acre is not present, leave live trees to bring the total to one per acre. Where possible, to enhance visual quality, leave clumps of up to 4 trees. (LRMP 3-20 VG-26)

Decide, on a case-by-case basis, to protect oak scrub stands or convert them to sand pine stands. Scrub-jay habitat suitability is one of the considerations in the decision. (LRMP 3-20 VG-27)

Watershed and Air
Clearcut harvesting will not occur within 35 feet of lakes and ponds 2 acres or larger, seasonal lakes and ponds, and all sinkholes that open to the Florida aquifer, as set forth in the Revised 2000 Silviculture Best Management Practices Manual. (LRMP 3-24 WA-2 and WA-3)

During prescribed burning operations, suppressant foam will not be applied within wetland ecotones when wetlands are holding water, and foaming agent containers will not be rinsed in wetlands. (Prescribed Burning BE)

Wildlife Protection Measures
Protect bald eagle breeding areas by meeting the guidelines established in the most recent version of the National Bald Eagle Management Guidelines (see project specific design criteria below). (Forest Plan Amendment #8)

Indigo snakes and gopher tortoises will be avoided or otherwise protected from harm when encountered by personnel, cooperators, or contractors engaged in activities that endanger individual specimens. (LRMP 3-29 WL-10)

Timber contractors undergo an educational program that includes information on the physical characteristics of indigo snakes, life history, and types of habitats where the snake is found. Contractors are also instructed to comply with Standards and Guidelines WL-10-12. This measure is as put forth in the Biological Opinion for the Revised LRMP.

Field personnel and contractors will be educated in gopher tortoise burrow identification. In potential gopher tortoise habitat, establishing log landings, designating skid trails, and parking equipment within 25 feet of known gopher tortoise burrows is prohibited. Equipment operators will be instructed to maintain a 25-foot distance during operations when previously unknown burrows are encountered.
(LRMP 3-29 WL-11; amended in Forest Plan Amendment #8)

Project-Specific Criteria
No roller-chopping activities will occur from May to August to prevent destruction of the eggs or young of ground-nesting birds and herpetofauna.

If actively occupied striped newt ponds are discovered within or adjacent to the project area, the potential habitat of any terrestrial striped newts would be protected from roller-chopping with a 700-foot radius buffer from the occupied wetland margin.

4.1 Species Not Considered

Potential effects on eleven sensitive species are not considered because treatment areas are outside the established range of the species or does not contain habitat associated with the species. **The proposed actions will have no effect on these species.** A list of species not considered and short explanations are in Appendix I.

4.2 Florida Mouse (*Podomys floridanus*)

Impacts of Proposed Action

Direct and indirect impacts

Mature sand pine stands scheduled for harvest would not be likely to be occupied, since canopy closure can reduce or eliminate habitat for the Florida mouse (Myers 1990). Chopping and prescribed burning would be unlikely to directly impact Florida mice inhabiting stands post-harvest since they could escape to tortoise burrows or areas left undisturbed, but some chance exists that individuals could be harmed by the described actions. Harvesting, chopping, and burning activities indirectly benefit the Florida mouse by creating an open canopy and sustaining oak species within an age range that provides mast. Gopher tortoises would also benefit from these treatments, and the Florida mouse shares a close association with this species' burrows (Layne 1992). Seeding will not create any direct effects due to its low disturbance. Reforestation may indirectly impact the Florida mouse as project stands mature and achieve canopy closure thereby impacting gopher tortoise habitat quality and lowering oak densities. However, the overall impact is beneficial because the practice allows land managers to treat needed acreages of habitat that cannot be maintained with fire or other means. The portion of the proposed project at Big Prairie/Long Pond is not anticipated to have any impacts on the Florida Mouse.

Cumulative impacts

The management action, when considered with past, present, and reasonably foreseeable future land management, would provide a beneficial cumulative impact on the Florida mouse. Early successional habitat will be generated and maintained in a mosaic of different ages across the landscape. Connected and future actions benefiting the gopher tortoise will also benefit the Florida mouse.

The proposed action ***may impact individuals but would not be likely to result in a trend towards federal listing or loss of viability.*** Overall, the action would promote favorable habitat conditions. While these conditions will wane over time as the sand pine matures and canopy closure occurs, habitat association objectives in the LRMP aim to maintain a significant portion of scrub in younger age classes, ensuring adequate quality habitat for the Florida mouse over the landscape.

4.3 Sherman's Fox Squirrel (*Sciurus niger shermani*)

Impacts of Proposed Action

Direct and indirect impacts

Harvest activities may directly impact squirrel young if mature sand pine trees with nests are removed. Adults with territories within harvest boundaries may have a brief negative indirect impact by increased exposure to predation while establishing a new territory. Harvested stands may indirectly benefit squirrels in nearby stands by providing additional mast sources when oaks resprout and begin producing mast (approx. three years post-harvest). Roller-chopping, prescribed burning, and reforestation activities would not cause any direct impacts because newly harvested stands

would only be used for occasional foraging. These activities would provide indirect benefit by promoting oak growth and acorn production in the short term and sand pine seed in the long term. The portion of the proposed project at Big Prairie/Long Pond is not anticipated to have any impacts on the Sherman's fox squirrel.

Cumulative impacts
The management action, when considered with past, present, and reasonably foreseeable future land management, would provide a minor beneficial impact to the Sherman's fox squirrel, in particular individuals occupying sandhills habitat adjacent to sand pine scrub habitat. Continued management will provide a consistent regeneration of younger, more mast-productive scrub habitat balanced with older habitat suitable for nesting.

The proposed action ***may impact individuals but would not be likely to result in a trend towards federal listing or loss of viability*** for the Sherman's fox squirrel. Treatment may disturb or displace individuals in project stands, but species' use of this habitat is low and impacts would not be significant. Treatment of the project area helps to provide additional mast sources and mature habitat over the landscape.

4.4 Florida Black Bear (*Ursus americanus floridanus*)
Impacts of Proposed Action
Direct and indirect impacts
Harvest operations may directly impact pregnant or nursing sows denning in dense sand pine stands. Sows in such areas may have to move or potentially abandon cubs. Harvest activities will indirectly benefit black bears by providing mast sources while the stand is young, and by providing escape cover and denning sites as the stand matures. Chopping, prescribed burning, and reforestation activities will not directly impact black bears because open areas with little cover are not used significantly. Chopping and burning will provide minor indirect growth by stimulating oak growth and mast production. Sand pine regeneration may indirectly impact black bears by decreasing oak growth and mast production when the stand reaches canopy closure. This impact will be offset by the presence of escape and denning cover. Newly harvested stands nearby could provide mast. The portion of the proposed project at Big Prairie/Long Pond is not anticipated to have any impacts on the Florida Black Bear.

Cumulative impacts
The management action, when considered with past, present, and reasonably foreseeable future land management, would provide a beneficial impact to the Florida black bear by continuing to provide a mosaic of oak scrub habitat in different age classes. Black bears require habitat of varied ages to satisfy natural history requirements throughout their life span (i.e., food, escape cover, denning cover, travel corridors).

The proposed action ***may impact individuals but would not be likely to result in a trend towards federal listing or loss of viability*** for the Florida black bear. Treatment may disturb or displace individuals in project stands, but the project helps maintain the landscape in a mosaic of habitats and age classes that provide for all the natural history requirements of the species.

4.5 Gopher Tortoise (*Gopherus polyphemus*)

Impacts of Proposed Action

Direct and indirect impacts

Harvest activities will not directly impact the gopher tortoise because mature sand pine stands have too much canopy cover to support tortoises. Stands designated for post-harvest chopping and prescribed burning treatments may be occupied by gopher tortoises, but tortoises can retreat to their burrows and their burrows will be marked and avoided per the design criteria. Gopher tortoises would indirectly benefit from harvest activity due to creation of new habitat and an increase in ground cover. Studies have shown increases in clutch size, growth rate, and rate of mass gain in gopher tortoises after clearcutting, probably in response to food increases (Diemer-Berish and Moore 1993). Chopping and prescribed burning also provide indirect benefit by stimulating new palatable vegetative growth in forage species.

Seeding will not create any direct effects due to its low disturbance and the avoidance of burrows. Reforestation may indirectly impact the gopher tortoise as project stands mature and achieve canopy closure. The overall impact is beneficial because it allows land managers to treat needed acreages of habitat that cannot be maintained with fire or other means. The portion of the proposed project at Big Prairie/Long Pond is not anticipated to have any impacts on the gopher tortoise.

Cumulative impacts

The management action, when considered with past, present, and reasonably foreseeable future land management, would provide a *beneficial impact* to the gopher tortoise by allowing land managers to treat needed acreages of habitat that cannot be maintained with fire or other means. This management scheme provides a consistent influx of young habitat for the gopher tortoise.

The proposed action ***may impact individuals but would not be likely to result in a trend towards federal listing or loss of viability*** for the gopher tortoise. Minor disturbance is possible and direct impact is remotely possible, but mitigations provided by design criteria minimize the possibility of this occurring. Overall impacts provide benefit by continuing to regenerate early successional scrub thereby increasing food availability and creating/maintaining an open habitat structure.

4.6 Florida Pine Snake (*Pituophis melanoleucus mugitus*)

Impacts of Proposed Action

Direct and indirect impacts

Harvest activities would be an unlikely mortality risk for Florida pine snakes since mature sand pine stands have too much cover to support associated species (pocket gophers, gopher tortoises). Any individual present prior to harvest can easily leave the stand. Florida pine snakes can also avoid direct impacts from harvest, chopping, or burning operations by leaving the stand or taking refuge in gopher tortoise burrows or undisturbed habitat. Harvest, chopping, and burning activities provide indirect benefit by creating habitat conditions (open canopy, areas of open bare ground, coarse woody debris) beneficial to major prey items such as pocket gophers and other rodents. These conditions also benefit gopher tortoises, whose burrows would provide refuge from predators and temperature extremes. The activities would also create a mix of exposed and shaded areas for pine snakes to thermoregulate.

Reforestation activities would not create any significant negative long-term indirect impacts. There could be intermediate periods where a seeded stand could become dense enough to preclude use by

the Florida pine snake or its associated species, but eventually the canopy would open enough to provide suitable conditions. Since Florida pine snakes have large home ranges (up to several hundred acres), they use a variety of habitats and age classes throughout their daily and life cycles (Franz 1992). Current management provides for a variety of age classes across the landscape. The portion of the proposed project at Big Prairie/Long Pond is not anticipated to have any impacts on the Florida pine snake.

Cumulative impacts
The management action, when considered with past, present, and reasonably foreseeable future land management, would provide a cumulative beneficial impact to Florida pine snakes by sustainably providing a mosaic of age classes within sand pine scrub habitat. A patchwork of different age classes provides for the various life history needs of a species with a large home range such as the Florida pine snake.

The proposed action would provide ***beneficial impacts*** to the Florida pine snake because harvest treatments will increase habitat quality for an important prey species (the pocket gopher) over the short term, and over the long term provide a variety of age classes within sand pine scrub habitat.

4.7 Scrub Lizard (*Sceloporous woodi*)
Impacts of Proposed Action
Direct and indirect impacts
Harvest activities would not directly impact scrub lizards because they do not inhabit mature pine stands. Scrub lizards are quick enough to evade machinery used in harvest and roller-chopping treatments, and thus a significant impact from mortality would not be expected from these activities. Some risk of egg destruction exists, but the indirect benefits of treatment outweigh potential egg loss. Scrub lizards could also escape or use burrows for protection from prescribed burn operations. Harvest activities would provide an indirect beneficial impact by increasing habitat quality (e.g., areas of bare sand for basking and feeding) immediately after harvest. Studies have shown an increase in scrub lizard relative abundance in harvested, chopped, and broadcast seeded stands versus mature forest (Greenberg et al. 1994). Roller-chopping and prescribed burning would provide indirect benefits by reducing shrub and leaf litter layers, creating open bare ground and reducing coarse woody debris.

Seeding would not directly impact the scrub lizard because individuals can easily avoid the farm tractor and soil disturbance only affects the top inch of soil. Reforestation could indirectly negatively impact the species by decreasing the amount of time a harvested stand would remain suitable for scrub lizards. However, the overall impact is beneficial because the practice allows land managers to treat needed acreages of habitat that cannot be maintained with fire or other means. The portion of the proposed project at Big Prairie/Long Pond is not anticipated to have any impacts on the Scrub Lizard.

Cumulative impacts
The management action, when considered with past, present, and reasonably foreseeable future land management, would provide a beneficial impact to the scrub lizard by providing a consistent level of early successional scrub habitat on the landscape.

The proposed action ***may impact individuals but would not be likely to result in a trend towards federal listing or loss of viability*** for the scrub lizard. Treatment may create minor

disturbance, but ultimately will be beneficial by improving habitat quality over the short term, and over the long term provide a variety of age classes within sand pine scrub habitat.

4.8 Short-tailed Snake (*Stilosoma extenuatum*)

Impacts of Proposed Action

Direct and indirect impacts

Although the short-tailed snake is primarily associated with longleaf pine-turkey oak habitat, it is "occasionally" found in sand pine scrub habitat adjacent to its primary habitat (Moler 1992). Harvest activities could impact individuals or eggs residing beneath the soil surface or surface debris by direct mortality or increased exposure of individuals forced to leave harvest stands. However, the species' ecology is not well known and its fossorial nature suggests that it would be more likely to occupy younger scrub habitat versus mature scrub habitat. If such a relationship exists, harvest activities would provide an indirect benefit by regenerating early successional scrub habitat and soil conditions that promote fossorial locomotion.

Roller-chopping presents a small risk of direct mortality of individuals or eggs residing beneath debris or just under the soil surface. Since the species is seldom seem above ground, it is likely that they spend most of their lives deeper than the 8"–10" that the chopper blades impact the soil, and thus the risk of direct impact is small. Chopping would provide indirect benefit by reducing coarse woody debris and creating open areas of bare sand. Chopping would not be anticipated to significantly impact the crowned snake, a major prey species for the short-tailed snake (Moler 1992b). Prescribed burning poses little threat of direct impact due to the fact that the species' fossorial nature would protect it from any fire treatments. Prescribed burning would indirectly benefit the short-tailed snake by reducing coarse woody debris and creating open areas of bare sand.

Reforestation activities would not directly impact the short-tailed snake because the disturbance is minor and only impacts the top inch of the soil layer. These activities may indirectly impact the short-tailed snake by decreasing the amount of time the habitat remains in suitable conditions. As a stand matures, sand pines would grow larger and hinder movement through the soil. However, as mentioned with other early successional species, reforestation allows managers to effectively maintain a mosaic of age classes across the landscape, thereby ensuring a constant influx of early successional stages for species such as the short-tailed snake. The portion of the proposed project at Big Prairie/Long Pond is not anticipated to have any impacts on the short-tailed snake.

Cumulative impacts

The management action, when considered with past, present, and reasonably foreseeable future land management, would provide a beneficial impact to the short-tailed snake by allowing land managers to treat needed acreages of habitat that cannot be maintained with fire or other means. This management scheme provides a consistent influx of early successional habitat for the short-tailed snake.

The proposed action ***may impact individuals but would not be likely to result in a trend towards federal listing or loss of viability*** for the short-tailed snake. Treatment may create minor disturbance, but ultimately will improve habitat quality over the short term. Over the long term and landscape-level, management will provide a variety of age classes within sand pine scrub habitat.

4.9 Striped Newt (*Notophthalmus perstriatus*)

The striped newt is a small aquatic salamander endemic to north-central Florida and southern Georgia. Striped newts breed in isolated temporary ponds in sandhills and scrub habitat. The striped newt is an opportunistic feeder on items such as frog eggs, fairy shrimp, and bottom-dwelling invertebrates (Christman and Franz 1973). Little is known about striped newt ecology outside of its breeding phase.

Adults are known to disperse from ponds into upland habitat. Dispersal from breeding ponds may average longer distances than other salamanders. Johnson (2001) estimated that at least 16% of striped newts leaving breeding ponds in a central Florida population dispersed more than 1,640 feet. However, documentation of striped newts breeding in scrub ponds indicate that individuals remain in the ponds as paedomorphic adults and do not move out into the upland scrub areas, likely due to a lack of favorable ground conditions. Anecdotal evidence suggests that striped newt occurrence in scrub ponds is related to pond connectivity, since isolated scrub ponds have low incidences of striped newts.

There are ponds known to have been occupied by striped newts within the project area (see Map 5). Only a portion of potential ponds have been surveyed for striped newts. For analysis purposes, occupation will be assumed for all ponds within the project area.

Impacts of Proposed Action

Direct and indirect impacts

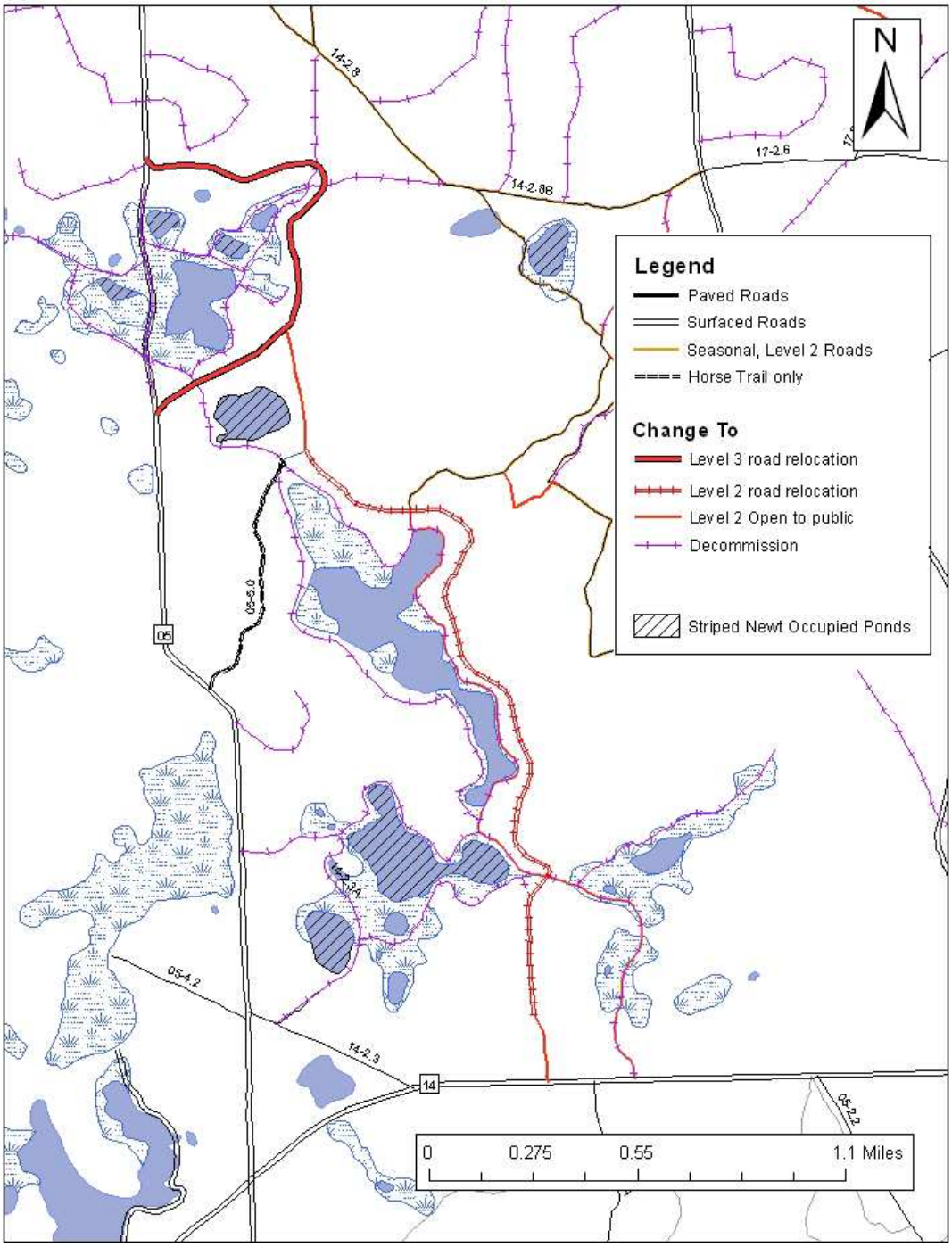
Any striped newts occupying mature sand pine forest within the project area could be directly impacted by harvest, roller-chopping, and prescribed burning activities. However, there is no evidence that suggests striped newts utilize mature terrestrial sand pine scrub habitat. If striped newts were present in scrub project stands, they could experience some negative indirect effects from changes in the forest stand microclimate (higher soil temperatures, decreased soil moisture) and structure (decreased leaf litter and coarse woody debris) that are unfavorable for amphibians.

Since striped newt use of scrub appears limited to ponds, existing design criteria stating that harvesting will not occur within 35 feet of lakes and ponds more than 2 acres should prevent any direct or indirect impacts from affecting striped newts occupying ponds within the project area. The existing design criteria also states that roller-chopping will not occur within 700 feet of ponds known to be occupied by striped newts. This protects paedomorphic adults within ponds and the majority of any terrestrial adults using the upland habitat (if such use occurs) from direct impacts from the roller-chopper. Currently, no occupied ponds are located such that these design criteria would need to be implemented, but should any changes occur these measures will be used.

Reforestation activities will not be likely to create any direct impacts since the disturbance is low and would occur in upland scrub areas. Seeding is not anticipated to introduce any indirect impacts since upland sand pine scrub habitat is not known to be used by the species.

Road decommissioning in the Long Pond area will benefit the striped newt by allowing vegetation to become reestablished along the edges of the wetland basin, promoting moisture retention and providing escape cover for dispersing newts and thereby allowing for increased connectivity for striped newts within the wetland complex in the general area. Moving the Level 2 road further into the scrub should not significantly impede striped newt dispersal since the proposed road location is

Map 5. Road relocations with known occupied striped newt ponds identified



at the break between mesic and xeric habitats, and newts are most likely to remain in mesic habitats. Road re-routing in the Big Prairie area will allow free movement within the natural wetland basin of the prairie. Should culverts be installed in lieu of re-routing, this would still provide for increased water flow between opposite sides of the road, and provide important points where newts could move within the prairie. While the proposed road arrangement does not completely eliminate dispersal barriers over the larger area, it does remove a significant portion of the current dispersal barriers and greatly improves wetland connectivity in the area.

Cumulative impacts
The management action, when considered with past, present, and reasonably foreseeable future land management, would provide a beneficial cumulative impact. Continued landscape-scale scrub habitat management and included design criteria will maintain wetland-upland connectivity, promote colonization of new breeding ponds, and prevent mortality in extant breeding ponds.

The proposed action ***may impact individuals but would not be likely to result in a trend towards federal listing or loss of viability for striped newts***. While some proposed treatments present limited risk of direct mortality, the presence of design criteria limits the amount of risk and the resultant removal of dispersal barriers and improvement in wetland connectivity provide a distinct benefit to the species.

4.10 Round-tailed Muskrat (*Neofiber alleni*)

Impacts of Proposed Action

Direct and indirect impacts
The portion of the project located in the Long Pond/Big Prairie wetland complex is the most likely to be occupied by round-tailed muskrats. The species is associated with shallow marshes with dense emergent vegetation. Maidencane (*Panicum hemitomon*) and pickerelweed (*Pontederia cordata*) are important plant species for food and cover (Lefebvre and Tilmant 1992). Design Criteria for watershed management (WA-2 and WA-3) state that timber harvesting is prohibited within 35 feet of lakes and ponds. This measure will prevent treatments from causing direct mortality in muskrats inhabiting lake and pond edges. Under normal conditions, harvest, mowing, and roller-chopping activities would pose a very small risk of direct mortality for round-tailed muskrats. Muskrats occupying typical suitable habitat would only be exposed to disturbance if dispersing from a lake or pond edge.

Little is known about the ability of the round-tailed muskrat to disperse other than anecdotal accounts, but it can be safely assumed that in conditions of extreme habitat unsuitability, such as drought or flooding, round-tailed muskrats would disperse in search of suitable habitat elsewhere. Harvest, mowing, and roller-chopping activities would be unlikely to be carried out in flooded conditions (due to ineffectiveness and access) and thus would not pose much risk of direct mortality. Under droughty conditions, these activities could be carried out. Round-tailed muskrats dispersing during harvest, mowing, or roller-chopping treatments could conceivably be impacted via mortality, but muskrats are quick enough to avoid disturbance from a quick-moving piece of machinery such as a mower. Thus direct mortality from harvest, mowing, and roller-chopping treatments would be unlikely.

The increased connectivity resulting from the actions around the Long Pond and Big Prairie areas would benefit the round-tailed muskrat. Actions connected with road obliteration would not create significant disturbance and would be unlikely to impact the species.

Cumulative impacts
The management action, when considered with past, present, and reasonably foreseeable future land management, would provide a beneficial cumulative impact. Continued landscape-scale scrub habitat management, included design criteria, and road assessment will improve wetland-upland connectivity for the round-tailed muskrat.

The management action alternative ***may impact round-tailed muskrat individuals but is not likely to cause a trend to federal listing or a loss of viability***. While some proposed treatments present a discountable risk of direct mortality to dispersing individuals, design criteria in place prevent significant impacts to essential marsh habitat and the road relocation portion of the project will improve wetland connectivity.

4.11 Florida Sandhill Crane (*Grus canadensis pratensis*)

Impacts of Proposed Action

Direct and indirect impacts
Studies have shown that the sandhill crane prefers ecotonal habitat between wetland/pasture and wetland/forest transitions (Nesbitt and Williams 1990). Open upland areas with low density understories are important to cranes as feeding grounds during the post-nesting period (Nesbitt 1992). Due to the 35-foot buffer design criteria, no actions will be close enough to prairie edge to impact Florida sandhill crane nesting. Any disturbance would most likely impact foraging behavior, but the majority of proposed actions will not affect foraging because the habitat will not be favorable prior to the proposed action. Prior to harvest, the habitat will be extremely poor at time of harvest due to dense understory and midstory components. After harvest but prior to activities such as roller-chopping, seeding, and prescribed burning, the habitat will have high amounts of coarse woody debris on the ground and will not be good foraging habitat. The species prefers to forage in pasture/prairie-like conditions with open, clear ground.

Cranes will not likely use newly harvested stands due to the amount of coarse woody debris on the ground, but may use the edges of harvested stands near open areas (such as prairies) for foraging. Prescribed burning for site preparation could indirectly benefit cranes by creating a flush of insect prey that they may exploit, especially at stand edges close to prairies.

The road relocation activities may create minor temporary localized disturbance during decommissioning and relocation, but will decrease future disturbance by preventing vehicular access and promote foraging by reestablishing vegetation in former roadways at the important habitat transition.

Cumulative impacts
The management action, when considered with past, present, and reasonably foreseeable future land management, would provide a beneficial cumulative impact on the Florida sandhill crane by improving an important habitat transition that is important for sandhill cranes. There are no anticipated future actions that would result in a negative impact on wetland habitats.

The management action alternative would provide ***beneficial effects*** for the Florida sandhill crane by creating increased foraging opportunities in certain areas. Any disturbance will be minor and temporary.

5.1 Sensitive Plant Species Associated with Sand Pine Scrub Habitat

Impacts of Proposed Action

Direct and indirect impacts

The sensitive species associated with sand pine scrub habitat are herbaceous/ground cover or shade-intolerant understory plants that require open habitat conditions (e.g., lack of a canopy, open mostly bare areas of sand). Therefore it is unlikely that harvest operations would impose significant direct impacts on these species since it is unlikely that they would occur in the harvest areas, which have developed canopies. It is possible that some of these species could occur on the periphery of a harvest operation, where adjacent disturbances could have created favorable conditions, but such occurrences would be infrequent and any impacts would be unlikely to significantly impact even local populations, much less cause a trend towards federal listing or a loss of viability. Plants in areas receiving an excessive amount of disturbance, such as a log landing, may experience mortality in an extremely limited area and therefore any individuals impacted would be minimal. Harvesting would remove the canopy and create open conditions favorable for the many of the sensitive species listed. The shade-intolerant woody species would appear later after colonizers and ground cover have become established.

Roller-chopping and prescribed burning present some risk of direct impact to scrub-associated sensitive species, but most scrub endemic species possess a hardy bulb or other underground root structure that allow the plants to resprout after disturbance. Roller-chopping and prescribed burning would reduce the coarse woody debris left behind by harvest operations, creating open conditions. Prescribed burns of moderate intensity would create a flush of nutrients for plants. Timber harvest following by prescribed burning and a rain event could cause minor erosion in some areas with leaching of nutrients. Burning would likely increase germination and stimulate re-sprouting and growth in fire-adapted sensitive species.

Reforestation activities would be unlikely to cause any direct impacts because the process creates very minor physical disturbance, and the scrub-adapted species and colonizing plants are adapted to disturbance. As the midstory and canopy develop, many species would be indirectly impacted by becoming shaded out or by losing the open sandy areas required, but such changes are a part of succession. Future harvests would be planned to ensure that a mix of age classes occurs throughout the landscape.

Road work performed for support of harvest operations may introduce some risk of direct impacts to individual plants occurring near road edges being pushed or trampled during roadwork. Previously closed roads that will be opened will experience increased disturbance. Plants that have colonized the roadway during closure would be subject to trampling. Such direct impacts would be very limited in scope and would not be significant enough to cause concern for species' viability. Indirect impacts from road work include the introduction of non-native invasive plant species from contaminated surfacing material.

Cumulative impacts

The management action, when considered with past, present, and reasonably foreseeable future land management, would provide a beneficial cumulative impact. Continued landscape-scale scrub habitat management would help provide the new early successional habitat required by these species over the long term.

The proposed action ***may impact individuals but would not be likely to result in a trend towards federal listing or loss of viability***. The proposed treatments present only a limited amount of risk of direct impacts to individual plants, much less pose any risk to the greater localized populations of these sensitive species. Indirect impacts are mostly beneficial and any negative effects are attributed to natural successional changes. Over the long term and landscape-level, management will provide a variety of age classes within sand pine scrub habitat.

5.2 Sensitive Plant Species Associated with Wetlands Habitat

Impacts of Proposed Action

The only parts of the proposed project that would impact wetland habitat are the road decommissioning and relocation actions in the Long Pond and Big Prairie areas. All other activities are within the sand pine scrub ecosystem and will not impact wetland plant species.

Direct and indirect impacts

Road decommissioning activities would not create any impacts on sensitive wetlands plant species because the areas of concern have already been denuded of vegetation. Revegetation of these areas will benefit any sensitive wetlands plants in the surrounding area by stabilizing soil and improving water retention in the immediate area, thereby promoting colonization.

Cumulative impacts

The management action, when considered with past, present, and reasonably foreseeable future land management, would provide a beneficial cumulative impact. No anticipated future projects are projected to have negative impacts upon wetland habitats.

The proposed action would have a ***beneficial impact*** upon sensitive wetland plant species.

6.0 DETERMINATION OF EFFECTS

Based on the preceding analysis of the effects on Regional Forester's Sensitive Species, I make the following determinations that the proposed actions:

6.1 Alternative 1: Management Action
Sensitive Wildlife Species

- **May impact individuals but would not be likely to result in a trend towards federal listing or loss of viability** for the Florida Mouse, Sherman's Fox Squirrel, Florida Black Bear, Gopher Tortoise, Scrub Lizard, Short-Tailed Snake, Striped Newt, and Round-Tailed Muskrat. Net impacts would be beneficial.

- Would have a **beneficial impact** on the Florida Pine Snake and Florida Sandhill Crane.

Sensitive Plant Species

- **May impact individuals but would not be likely to result in a trend towards federal listing or loss of viability** for the 9 sensitive species that may occur in the project area based on habitat association with scrub habitats.

- Would have a **beneficial impact** on the 14 sensitive species sensitive species that may occur in the project area based on habitat association with wetland habitats.

6.0 REFERENCES

Chapman, B. R. 2007. Rafinesque's Big-eared Bat (*Corynorhinus rafinesquii*). Pages 134 – 139 *in* M. K. Trani, W. M. Ford, and B. R. Chapman, eds. The Land Manager's Guide to Mammals of the South. The Nature Conservancy, Southeastern Region, Durham, NC.

Christman, S. P. and L. R. Franz. 1973. Feeding habits of the striped newt, *Notophthalmus peristriatus*. J. Herpetology 7: 133-135.

Diemer-Berish, J. E. and C. T. Moore. 1993. Gopher tortoise response to large-scale clearcutting in northern Florida. Proceedings of the Annual Conference of the Southeastern Association of Fish and Wildlife Agencies 47: 419 – 427.

Franz, R. 1992. Florida Pine Snake (*Pituophis melanoleucus mugitus*). Pages 254 – 258 *in* P. E. Moler, ed. Rare and Endangered Biota of Florida, Vol. III, Amphibians and Reptiles. University Press of Florida, Gainesville, FL.

Greenberg, C. H., D. G. Neary, and L. D. Harris. 1994. Effect of high-intensity wildfire and silvicultural treatments on reptile communities in sand-pine scrub. Conservation Biology 8: 1047-1057.

Johnson, S. A. 2001. Life history, ecology, and conservation genetics of the Striped Newt (*Notophthalmus perstriatus*). PhD dissertation, University of Florida. 156 pp.

Layne, J. N. 1992. Florida Mouse (*Podomys floridanus*). Pages 250 – 264 *in* S. R. Humphrey, ed. Rare and Endangered Biota of Florida, Vol. I, Mammals. University Press of Florida, Gainesville, FL.

Lefebvre, L. W. and J. T. Tilmant. 1992. Round-tailed Muskrat (*Neofiber alleni*). Pages 276 – 286 *in* S. R. Humphrey, ed. Rare and Endangered Biota of Florida, Vol. I, Mammals. University Press of Florida, Gainesville, FL.

Moler, P. E. 1992. Short-tailed Snake (*Stilosoma extenuatum*). Pages 150 – 153 *in* P. E. Moler, ed. Rare and Endangered Biota of Florida, Vol. III, Amphibians and Reptiles. University Press of Florida, Gainesville, FL.

Nesbitt, S. A. 1992. First reproductive success and individual productivity in Sandhill Cranes. Journal of Wildlife Management 56: 573 – 577.

Nesbitt, S. A. and K. S. Williams. 1990. Home range and habitat use of Florida Sandhill Cranes. Journal of Wildlife Management 54: 92 – 96.

USDA Forest Service. 1999. Revised Land and Resource Management Plan for National Forests in Florida. National Forests in Florida, Tallahassee, FL. Management Bulletin R8-MB-83A

USDA Forest Service. 2006. Biological Evaluation of the Effects of Prescribed Burning on Proposed, Endangered, Threatened and Sensitive Wildlife Species. Ocala National Forest. 10 pp.

Appendix I. Sensitive Species Not Present

1.1 Dense Hydrobe (*Aphaostracon pycnus*)

The dense hydrobe is a small brown snail confined to the Alexander Springs Run on the Ocala National Forest. No proposed activities occur on or near the Alexander Springs Run.

1.2 Seminole Spring Siltsnail (*Cincinnatia vanhyningi*)

The Seminole Spring Siltsnail is a small snail confined to Seminole Springs in Lake County, Florida. No proposed activities occur in or near Seminole Springs.

1.3 Silver Glen Springs Cave Crayfish (*Procambarus attigus*)

The Silver Glen Springs Cave Crayfish is an albinistic crayfish known only to occur in Silver Glen Springs cave. No proposed activities occur in or near Silver Glen Springs cave.

1.4 Big-cheeked Cave Crayfish (*Procambarus delicatus*)

The Big-cheeked Cave Crayfish is an albinistic crayfish known only from Alexander Springs on the Ocala National Forest. No proposed activities occur on or near the Alexander Springs.

1.5 Hobbs' Cave Amphipod (*Crangonyx hobbsi*)

The Hobbs' Cave Amphipod is a small freshwater amphipod that is confined to groundwater habitats in caves. It has not been confirmed to occur in the aquatic caves of the ONF. No proposed activities occur in or near caves.

1.6 Arogos Skipper (*Atrytone arogos arogos*)

The Arogos Skipper is a small yellow butterfly with a scattered distribution of isolated populations throughout the eastern United States. Populations were known in the Lake Delancy area of the Ocala National Forest, but are no longer considered to be extant. No proposed activities occur in or near the Lake Delancy area.

1.7 Atlantic Sturgeon (*Acipenser oxyrhinchus oxyrhinchus*)

The Atlantic Sturgeon is a long-lived anadromous fish species that occurs in the rivers, estuaries, and of Florida. It has not been confirmed to occur in the rivers within or bounding the ONF. The proposed actions do not occur near any rivers, estuaries, or oceans.

1.8 Rafinesque's Big-eared Bat (*Corynorhinus rafinesquii*)

Rafinesque's Big-eared Bat is a medium-sized, long-eared bat that is considered rare throughout its entire range. Individuals have been documented in pine flatwoods and hardwood hammocks in Florida and have been observed roosting in large, hollow old-growth trees in bottomland hardwood forests (Chapman 2007). The project area does not contain large, old-growth hardwood trees or other potential roost sites for Rafinesque's Big-eared Bat. Based on the absence of potential roosting sites, the project will have no impact on Rafinesque's Big-eared Bat.

1.9 Bachman's Sparrow (*Aimophilia aestivalis*)

The Bachman's sparrow is a small, plain sparrow strongly associated with open pine woodlands in the southeastern United States. There are no open pine woodlands within the project area and therefore no proposed activities will impact the Bachman's sparrow.

1.10 List of sensitive plants occurring in wetland habitats unaffected by the proposed actions

Variableleaf Indian plantain (*Arnoglossum diversifolium*) – habitat: riverine swamps & wet woods

Hammockherb (*Hasteola robertiorum*) - saturated, peaty soils of river and creek floodplain swamps; hydric hammocks with cabbage palm, cypress, or hardwood canopy

Yellow anisetree (*Illicium parviflorum*) – wet woods and swamps

Pondspice (*Litsea aestivalis*) - swamps

Loose watermilfoil (*Myriophyllum laxumi*) – shallow fresh water

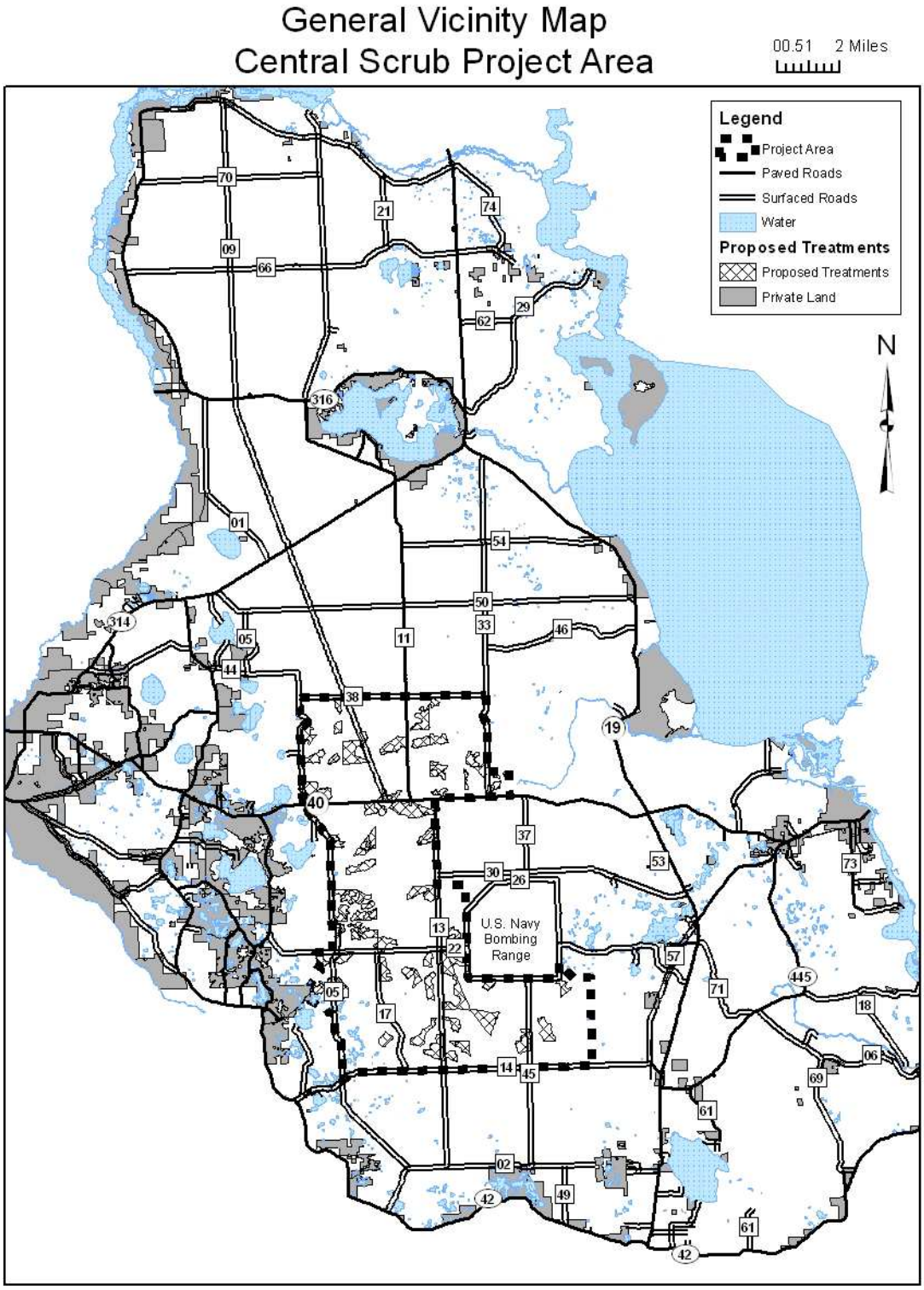
Needleleaf waternymph (*Najas filifolia*) – shallow fresh water

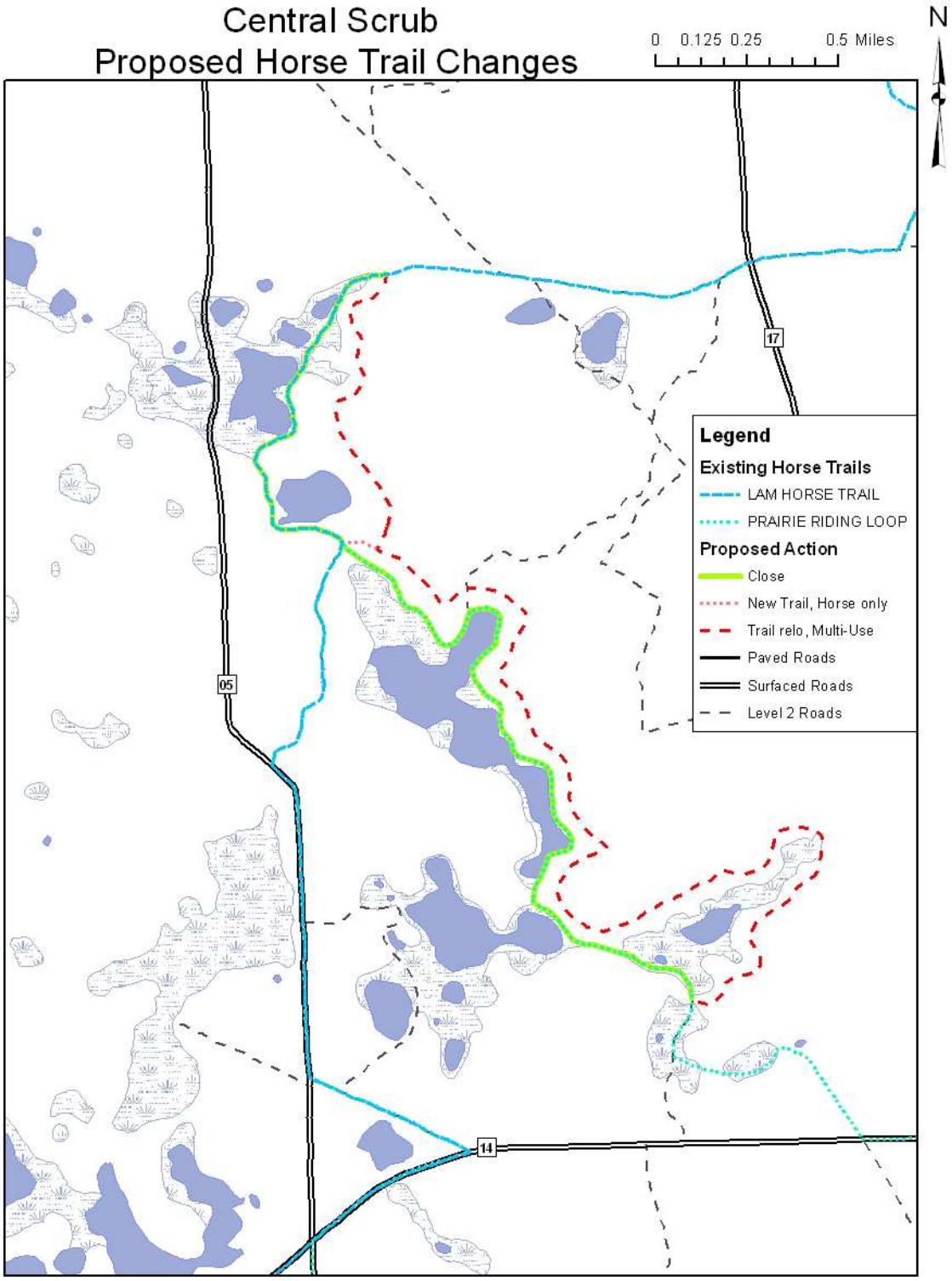
Florida willow (*Salix floridanum*) – wet woods and stream banks

Pineland Dropseed (*Sporobolus curtisii*) – pine flatwoods

Ocala vetch (*Vicia ocalensis*) – margins of streams

Appendix C – Project Map




Central Scrub
Proposed Horse Trail Changes
0 0.125 0.25 0.5 Miles
N
17
05
14
Legend
Existing Horse Trails
LAM HORSE TRAIL
PRAIRIE RIDING LOOP
Proposed Action
Close
New Trail, Horse only
Trail relo, Multi-Use
Paved Roads
Surfaced Roads
Level 2 Roads

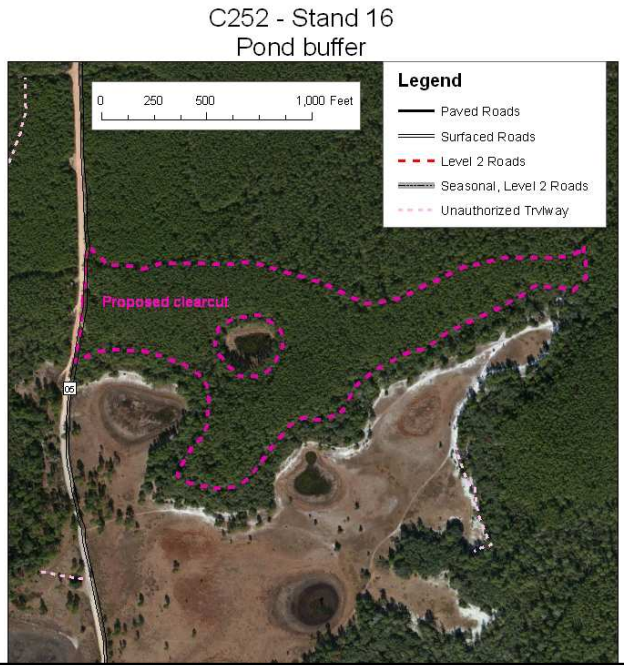
Appendix D – Forestwide Goals and Objectives

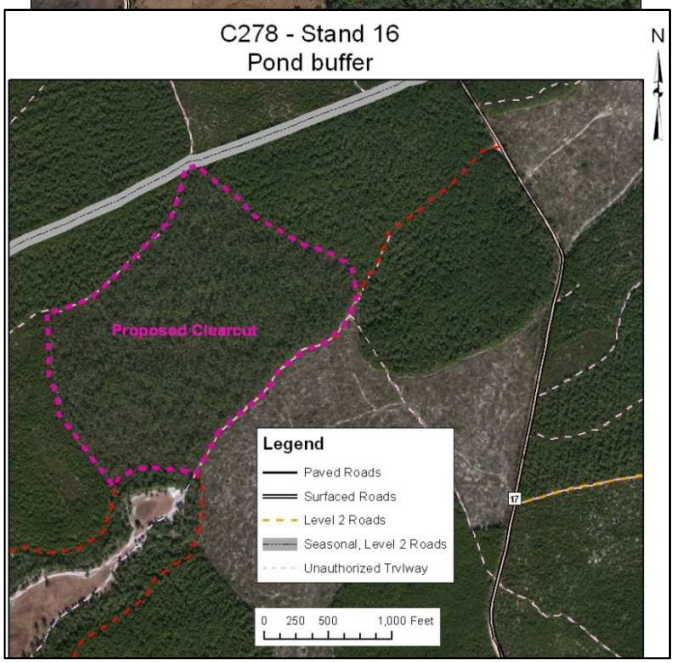
- Goal: Reduce hazardous fuels to lower the risks of catastrophic wildfire to people and communities, while mimicing the effects of fire on the ecosystem in support of the National Fire Plan.
- Goal: Increase the average opening size in the sand pine scrub ecosystem to increase scrub-jay occupancy, and better mimic natural disturbance processes that perpetuate rare and endemic plant and animal species in support of Forest Plan MA Standard and Guideline (S&G) 8.2-3 (LRMP, p. 4-47).
- MA 8.2 Goal: To produce pine pulpwood under conditions that balance efficient timber production practices with practices that promote the growth and perpetuation of species native to the Big Scrub area within the ONF. To provide a wide range of opportunities for people to use and experience the forest (LRMP, p. 4-46).
  MA 8.4 Goal: To provide conditions favorable to perpetuate Florida scrub-jay and other species that require young oak scrub and inhabit the Big Scrub area within the Ocala NF.
- Forest-wide Goal 5: Contribute to the social and economic well-being of local communities by promoting sustainable use of renewable natural resources and participating in efforts to devise creative solutions for economic health (LRMP, p. 2-3).
- Forest-wide Goal 6: Maintain or, where necessary, restore ecosystem composition, structure, and function within the natural range of variability in all ecosystems, with emphasis on longleaf pine-wiregrass, sand pine-oak scrub, pine flatwoods, hardwood/cypress, oak hammock ecosystems, and other imperiled specialized communities (LRMP, p. 2-3).
- Forest-wide Goal 8: Conserve and protect important elements of diversity - such as endangered and threatened species habitat, declining natural communities, and uncommon biological, ecological, or geological sites (LRMP, p. 2-4).
- Forest-wide Goal 9: Manage for habitat conditions to recover and sustain viable populations of all native species, with special emphasis on rare species (LRMP, p. 2-4).
- Forest-wide Goal 10: Apply prescribed burning technology as a primary tool for restoring fire's historic role in ecosystems (LRMP, p. 2-4).
- Forest-wide Objective 9: Maintain a dynamic system of at least 45,000 to 55,000 acres of habitat capable of supporting scrub-jays Forest-wide on the ONF. The 10-year population objective is 742 to 907 groups (LRMP, p. 2-5).
- Forest-wide Objective 19: Regenerate between 39,000 and 41,000 acres of sand pine on the ONF (LRMP, p. 2-6).
- Forest-wide Objective 21: Provide the following habitat conditions in the next 10 years (LRMP Table 2.2, p. 2-7).

Appendix E – Ponds to Protect

Water Resource Protection for Affected Stands (refer to Project Design Criteria # 1)

Cmpt/Stand		Treatment Planned	Protection Planned
C252-S29		Clearcut, burn	No harvest 100’ from pond/prairie edge
C278-S16	Clearcut, chop, seed sand pine	No harvest or chop 100’ from pond/prairie edge	
C279-S1	Clearcut, burn	No harvest 100’ from pond/prairie edge	






0 250500 1,000 Feet
Proposed clearcut
05
14
C279 - Stand 1
Pond buffer
Legend
Paved Roads
Surfaced Roads
Level 2 Roads
Seasonal, Level 2 Roads
Unauthorized Trvlway
bing

Appendix F -- Public Involvement

File Code: 1950
PALS #: **41484**
Date: March 11, 2013

Dear Friends of the Ocala National Forest:

For many years the Ocala National Forest has provided habitat for the world's largest populations of Florida scrub-jays and Florida scrub lizards. We have identified an analysis area, and have formed a proposed action (Central Scrub) that would create openings in the sand pine scrub canopy necessary to maintain viable populations of these species, as well as others that require young scrub habitat.

The project area would involve about 45,000 acres in the central portion of the Ocala National Forest within 28 compartments: 80, 81, 82, 83, 84, 85, 214, 215, 229, 230, 231, 244, 245, 246, 247, 248, 252, 253, 254, 255,2 56, 257, 272, 276, 277,2 78, and 279 (see vicinity map). The proposed action includes:

1) harvesting crooked wood and sand pine followed by prescribed burning and/or mechanical site preparation, and reforestation to sand pine on about 5,200 acres,
2) harvesting sand pine followed by prescribed burning and changing management to scrub oak on about 750 acres,
3) harvesting crooked wood and sand pine, no mechanical treatments, and natural regeneration on about 675 acres,
4) road work to support harvesting, mostly resurfacing with some reshaping of the existing road surface,
5) mechanical site preparation followed by seeding sand pine on about 220 acres,
6) decommission about 85 miles of roads* from the transportation system,
7) add about 10 miles of roads to the transportation system,
8) relocate the road around Long Pond and adjacent prairies to stop damage to the wetlands that is occurring from unmanaged vehicle use,

*Note: these were roads not selected to be open to the public in the EA for Route Designation in the Sand Pine Scrub Ecosystem of the ONF (2007). These roads have been identified as no longer needed to meet forest resource management objectives.

Your participation is requested during this early "scoping" stage of project formulation. Project specific comments will be used to identify issues, develop alternatives that respond to issues, and define the extent of analysis needed.

This project would comply with all applicable Forest Plan standards and guidelines, as well as any design features and monitoring requirements developed by the interdisciplinary team. Implementation would begin in 2014 and continue for several years.

I have appointed an interdisciplinary team to review concerns, develop alternatives, describe the affected environment, and analyze the effects of the alternatives on many resources. The effects of the project on proposed, endangered, threatened, and sensitive species of plants and wildlife will be discussed in biological assessments (BAs) to be prepared by a wildlife biologist. An

archeologist will prepare a heritage resource report to be reviewed by the Tribes and the State Historic Preservation Officer (SHPO). An Environmental Assessment (EA) will be prepared for me to determine whether an Environmental Impact Statement (EIS) will be necessary. Individuals commenting on the proposal or specifically requesting a copy will receive the EA.

I am seeking comments on this proposal pursuant to 36 CFR 215.5. Comments should be as specific as possible and must be postmarked or received within 30 days after publication of a legal notice in the Leesburg Daily Commercial. Hand-delivered comments must be received within our normal business hours of 7:30 a.m. to 4:00 p.m. Monday to Friday, closed on federal holidays. Comments may be sent electronically to our office, in a common digital format, at comments-southern-florida-seminole@fs.fed.us . Comments may be mailed to District Ranger, USDA Forest Service, Seminole Ranger District, 40929 State Road 19, Umatilla, FL 332784. Only those who submit timely comments or other expression of interest will have standing to appeal. Additional information for this proposal can be found at http://www.fs.fed.us/nepa/nepa_project_exp.php?project=41484 or contact Janet Hinchee at (352) 669-3153.

Sincerely,

MICHAEL HERRIN
District Ranger

Enclosures

Appendix G – Scrub Harvest Size and Opening Size

Table 8. Trend Analysis of Scrub Harvest Size on the Ocala National Forest

Decision	Project	Scrub Acreage	Number Stands	Number Harvest Units	Average Harvest Size (ac.)	Range of Harvest Size (ac.)	Number Units 100 to 149ac.	Number Units ≥ 150 ac.
9/1999	Eco. Mgt. Sand Pine Scrub	2,409	60	54	44.6	13 to 137	1	0
5/2003	Scrub-jay 02-00-02	4,941	97	84	58.8	7 to 160	10	2
11/2004	Hurricane Salvage (some Seminole RD areas)	3,257	72	61	53.4	7 to 201	4	3
2/2007	Scrub-jay FY-2004	2,199	37	33	66.6	14 to 160	7	1
9/2008	Scrub-jay Pipeline	3,087	44	37	83.4	15 to 157	6	7
10/2009	South Ocala Scrub	2,476	31	22	105	15 to 282	3	6
4/2011	Hog Valley Scrub	3,037	25	19	142.7	31 to 289	3	10
3/2013	19&40 – Alt. 1	5,439	59	38	140	21 to 634	4	11
	Central Scrub-ALT 1	6,577	80	52	117	11 to 584	8	14
	Central Scrub–ALT 2	6,331	52	41	150	24 to 584	6	18

Table 9. Trend Analysis of Scrub Opening Size on the Ocala National Forest

Decision	Project	Scrub Acreage	Number Stands	Number Openings	Average Opening Size (ac.)	Range of Opening Size (ac.)	Number Openings 100 to 149ac.	Number Openings ≥ 150 ac.
10/2009	South Ocala Scrub	2,476	31	22	105	15 to 282	3	6
4/2011	Hog Valley Scrub	3,440	36	21	213	33 to 435	3	16
3/2013	19&40 – Alt. 1	5,649	59	32	170	23 to 700	2	12
	Central Scrub-ALT 1	6,797	80	42	248	32 to 690	7	26
	Central Scrub-ALT 2	6,499	52	33	258	32 to 649	5	21

Appendix H. Age Class Distribution in Sand Pine Forest Type

Forestwide Objective #21 describes the desired age class distribution for sand pine:

Forest Type	0-10 years	11-30 years	31-50 years	> 50 years
% Sand Pine	20	45	25	10

The current age class distribution for sand pine within the analysis area is:

Forest Type	0-10 years	11-30 years	31-50 years	> 50 years
% Sand Pine	18	42	32	8

If the Proposed Action is implemented the age class distribution of sand pine within the analysis area would move toward the desired future condition and a few years after implementation in 2023, the age class distribution would be:

Year	Forest Type	0-10 years	11-30 years	31-50 years	> 50 years
2018	% Sand Pine	21	43	34	1
2023	% Sand Pine	15	33	46	6

Alt 2

Year	Forest Type	0-10 years	11-30 years	31-50 years	> 50 years
2018	% Sand Pine	20	43	35	2
2023	% Sand Pine	15	33	45	7

Appendix I. Economic Analysis

ALT 2: Central Scrub									
Short-term-existing stand	Year	Volume	Acres	Miles	$/vol. unit	$/acre	$/mile	Undiscounted Discounted	Discounted
Revenues:									
timber sale (CCF)	3	64653			40			2586120	2299051
TOTAL REVENUES(PV)									2299051
Financial Costs:									
Analysis and documentation	0		6423			3		19269	19269
other resource support	0		6423			3		19269	19269
Sale Prep (CCF)	2	64653			2.5			161632.5	149438
Harvest Admin (CCF)	3	64653			3			193959	172429
Road design & reconstruction	3			14.9			34300	511070	454339
Road maintenance	3			40			1900	76000	67564
Reforestation - sand pine	5		4457			195		869115	714349
TOTAL COSTS (PV)								1850314.5	1596657
Financial Present Net Value									702394
Benefit/Cost Ratio									1.44

Long-term-regen. stand	Year	Volume	Acres	Miles	$/vol. unit	$/acre	$/mile	Undiscounted Discounted	Discounted
Revenues:									
timber sale (CCF)	40	54132	0	0	40			2165280	451004
TOTAL REVENUES(PV)									451004
Financial Costs:									
Analysis and documentation	40		4511			3		13533	2819
other resource support	30		4511			3		13533	4172
Sale Prep (CCF)	42	54132			3			162396	31273
Harvest Admin (CCF)	42	54132			3			162396	31273
Reforestation	46		4511			195		879645	144802
Road Costs	42			15			25000	375000	72216
TOTAL COSTS (PV)								1231503	286555
Financial Present Net Value									164449
Benefit/Cost Ratio									1.57

Additional Costs-not sale related								
Analysis and documentation	0	45000		3		135000	135000	
Prescribe burning	4	3979		50		198950	170063	
Reforest sand pine	5	54		195		10530	8655	
Administer crooked wood sales	2	6369		2		12738	11777	
Hydrology Restoration	1					75,000	72115	
					non-sale total	432218	397611	